The NATIONAL GEOGRAPHIC MAGAZINE

Vol. XVIII OCTOBER, 1907 No. 10

CONTENTS

The Chinese Jews. By Oliver Bainbridge. Illustrated.

Tirnova, the City of Hanging Gardens. By Felix J. Koch. Illustrated.

Geologists in China. Illustrated.

Koyasan, the Japanese Valhalla. By Eliza R. Scidmore. Illustrated.

Dr. Bell's Tetrahedral Tower. Illustrated.

The Deep-water Route from Chicago to the Gulf. Illustrated.

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THE NATIONAL GEOGRAPHIC MAGAZINE

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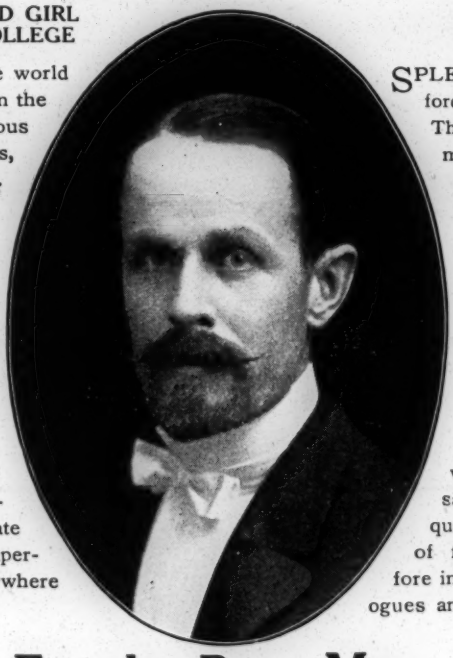

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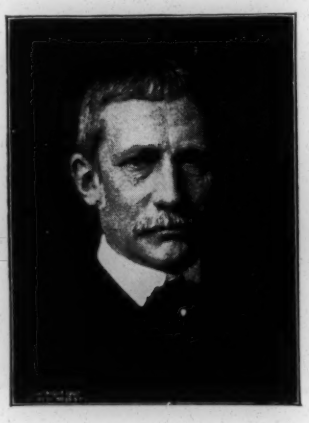

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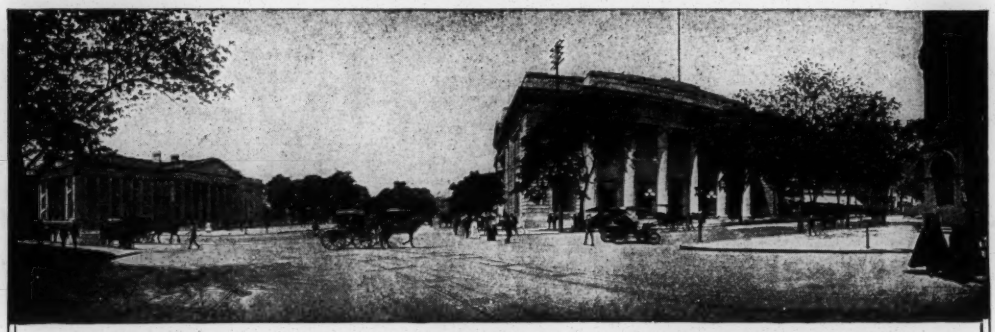

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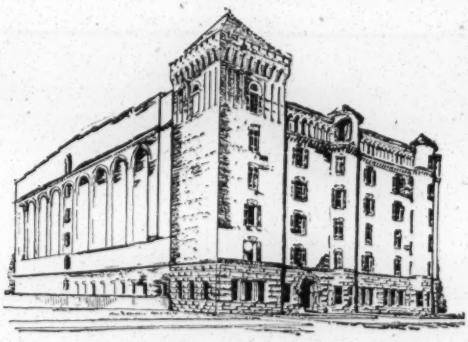

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VOL. XVIII, No. 10 WASHINGTON OCTOBER, 1907

THE NATIONAL GEOGRAPHIC MAGAZINE

THE CHINESE JEWS

BY OLIVER BAINBRIDGE

THE Chinese history affirms the city of Kaifengfu to have been the metropolis of the province and the seat of the empire during a long succession of monarchs, till it was at length overflowed and covered with sand by a great inundation. It is situated in a large fertile plain, about 5 or 6 miles from the Yellow River, and its low situation occasioned its ruin in 1642, when it was closely besieged by the rebel Li-Chung, at the head of 100,000 men. The general who was sent to relieve it conceived the fatal design of drowning the besieging army by breaking the great bank which had been reared at a vast cost to preserve the country from being overflowed by the Great Yellow River. His project succeeded, indeed, but proved the ruin and destruction, not only of the noble capital, but of three hundred thousand of its inhabitants, by the violence and rapidity of the inundation.

Some fifty years after this dreadful catastrophe a Jesuit missionary, going upon some occasion into the province of Honan, found a considerable synagogue in the city of Kaifengfu. He soon became acquainted with some of its learned chiefs, who introduced him into their synagogue and showed him one of the parchments or rolls of the Pentateuch written in Hebrew, together with the books of Joshua, Judges, Samuel, Kings, some of the prophets, and others containing their liturgy and commentaries. They owned they had lost some of the sacred books and some of their targums or paraphrases. This loss was caused by a violent overflowing of the great river, which had laid the capital wholly under the water and had damaged their Torah, or roll of the Pentateuch, and upon which they ordered twelve new copies to be taken from it. Today I find no synagogue, owing to another overflowing of the Yellow River—"China's Sorrow"—but in its place a dirty pond and a stone erected on the site bearing the following strange inscription:

"A monument in memory of the Great Ching Ching Cenoby. Oh Wu Lo Hau, the creator of this religion and grandson of the nineteenth generation of Punku, the principal ruler of the Mythical Era, was born in 146th year of the Chow dynasty (976 B. C.). He proved himself to be very wise, prudent, and merciful. He understood the mysteries of creation and the ideas of creation and could trace the troubled source of religion. The religious elements were not to believe in any idolatrous representation and not to flatter the ghost and fairy, and so

many people were at liberty to serve his religion as Cenobites in a manner that was as free as running water. The successor of Oh Wu Lo Hau was called La, and was born in the 613th year of Chow dynasty. His conscience and benevolence were noted by every one as he traveled to the Lah-na Mountains for the purpose of informing them regarding the Scripture. He restricted himself to fruits and vegetables instead of meat and bathed and fasted for forty days and nights. He attended to his duty with the utmost simplicity and sometimes even forgot to eat or sleep, but never ceased to pray with a sincere heart to his God, for he had obtained a book containing many sections. In this book there were strange things that could not be easily explained—in short, it indicated that the good was affected by those who became good, and the evil by those who did not bear in mind the warning. The successor of La was called Lo Tze Loh, and received from his predecessor the proper doctrine and explained the four words—"ching" (clear), "chew" (pure), "li" (ceremonial), and "pai" (to worship with a bow.) The word "ching" means to "direct your heart singly to one religion." The word "chew" means "not to be confused by any other secular ideas." The word "li" means "to stand on ceremony," and the word "pai," "to worship with a bow." With these instructions, the Cenobites were to teach one another in future.

During the beginning of the Sung dynasty (96 A. D.) there was a missionary surnamed "Li," who was accompanied by a crowd of Cenobites, and arrived in China with a lot of western cloth, which they presented to the Emperor of the Sung dynasty and became citizens of the country. Subsequently one of the grandsons of these people, called "Mu Sy Ta Pan," was appointed to do the preaching, and another, called "Jen Tu La," began to build a cenoby. It was destroyed after that and had to be rebuilt at the southeast of Tu Chai, in the 16th year of the Yuen dynasty (1280 A. D.).

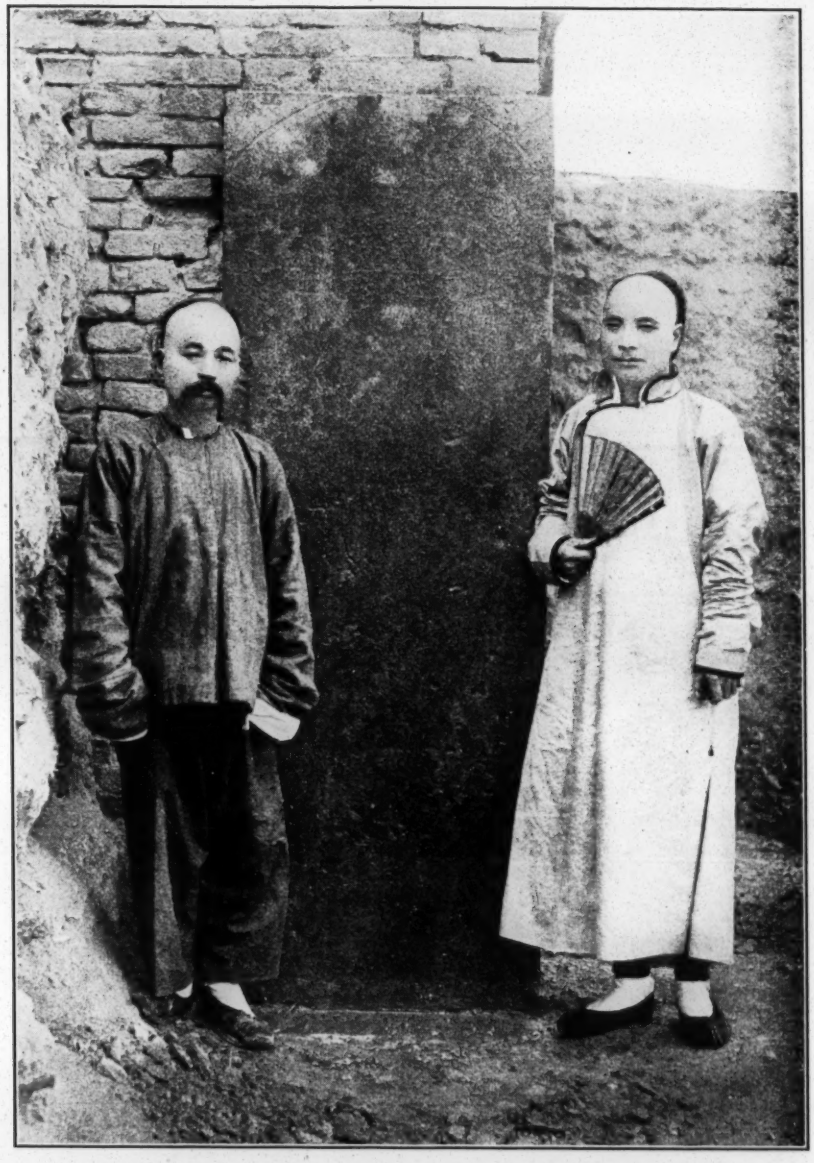
The Emperor Tai-Tsu, of the Ming dynasty (1368 A. D.), gave the Cenobites descended from Li a piece of land for their building, because he could well understand their Scriptures, which persuaded the people to do good instead of evil."

In the 19th year of "Wung Lo" (1403 A. D.) the cenoby was rebuilt, and was long afterwards destroyed by water, and the ruined scene that exists now proves this little bit of narrative.

The vast community referred to in the inscription has dwindled down to 8 families, numbering in all about fifty persons, who have in a great measure forgotten their characteristic observances through frequent vicissitudes and varied conditions of life.

I reached the main gate of the city of Kaifengfu (the ancient capital of the Middle Kingdom) one night about ten-thirty, with not too favorable an impression of Chinese carts or the shaggy little Chinese pony, which had a great habit of tearing off at every opportunity. The soldiers belabored the massive gate most industriously for about twenty minutes, when a small trap-door opened and the gate-keeper hurled epithets at us that were volcanic and picturesque. But when his saffron-colored palm had been covered with a few coins, his ruffled nature became as smooth as a sheet of polished silver, and we entered the ancient capital of the Middle Kingdom. For two miles we had to pick our way through narrow, stinking, slushy streets, packed with men, boys, horses, goats, sheep, dogs, cats, and donkeys, sleeping all over the place, while the changing of the night watchman's irons and the piercing wail of ragged, starving, filthy beggars carried one for the moment to the land of "ten thousand curses." What an unspeakable joy to reach the residence of Mr. C. W. Shields, the district inspector of Chinese posts, who received me with the courtesy of a prince. We had scarcely spoken a dozen words when the magistrate's secretary called for my card.

Next morning, before I was out of bed,



Memorial Stone Discovered by Mr Bainbridge Referring to
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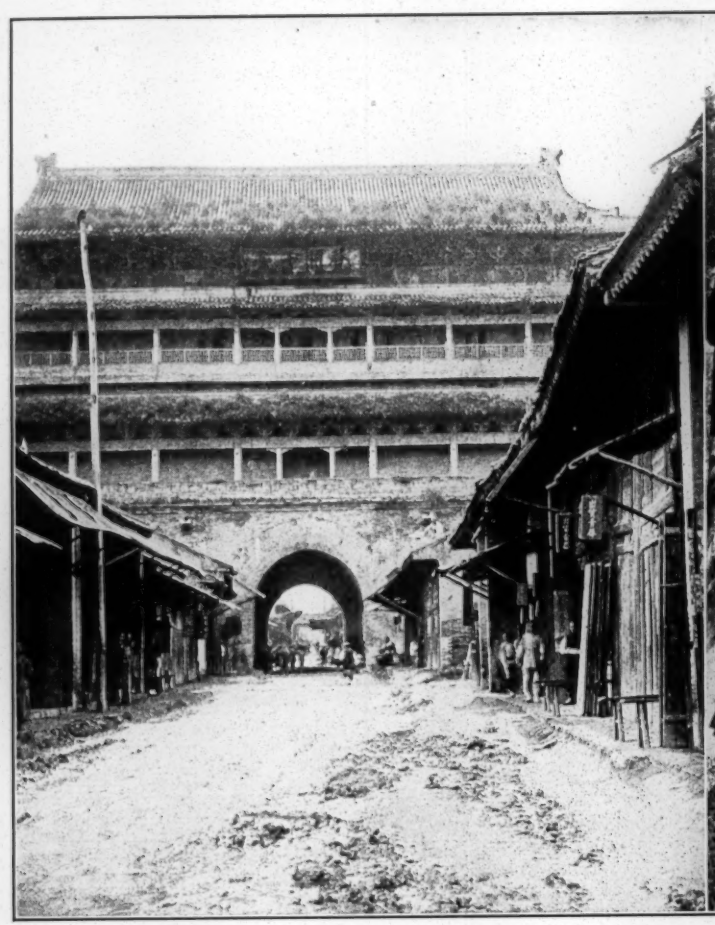


Photo by O. Bainbridge

The Main Gate of the Chinese City of Kaifengfu

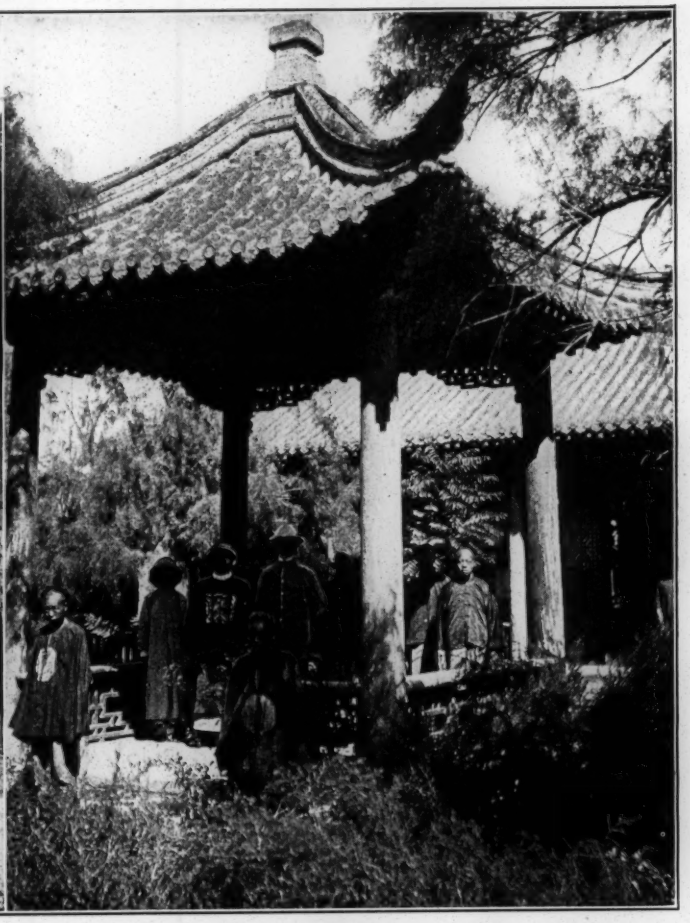


Photo by Inspector Shields

Kiosh Imperial Palace, N. L. Chang, Shu Shen, and Mr Bainbridge

Photo by O. Bainbridge

Chinese Waiting to See Mr Bainbridge Pass Along the Street

Photo by O. Bainbridge

Chinese Jew Who Told Mr Bainbridge the Wonderful Story of His People

another dignitary wanted to copy my passport, and informed me that it would be well to call at the Foreign Office. This I did, and found the officials polite and much interested in the object of my visit to their city, particularly His Excellency Chang Shu Shen, with whom I paid a visit to the imperial palace, one of the greatest curiosities in the whole empire and situated in the very heart of the city—a prodigious group of edifices, vast courts, gardens, kiosks, and palms, surrounded with a stately wall of considerable compass. It contains all the spacious and stately apartments of the Emperor and his family and afforded a safe retreat for the Dowager Empress during the occupation of Peking by the foreign troops. The city gates, pagodas, arches, towers, castles, banks, and other public buildings display a magnificence that must have been truly grand prior to the sad havoc wrought by the flooding of the Yellow River. A number of new, rickety-looking pieces of printed yellow and vermilion rice paper, pasted on the doors of every house and shop, I discovered were prayers against the evil influences of the foreign devil that had just arrived, and it was with considerable difficulty that I managed to get through the tremendous crowds, gathered in the streets to hear the foreign devil speak and curse him as he passed.

During the first three days I located all the temples and mosques likely to afford me any data, and on the fourth morning visited the ruinous site, which gave no evidence of the magnificent synagogue that once stood there or the wealth of its community, save for a weather-beaten commemorative stone that told the story of these people. While I was photographing and rubbing this stone, thousands of Chinese gathered around, and they came to the erroneous conclusion that I was a Jewish rabbi come to succor Chinese Jews, which the Mohammedan portion did not particularly relish, owing to the fact that a great many of the Jewish community had merged into Mohammedanism through persecution and distress. The Chinese always referred to the Jews as the "sect which pulls the sinews" and as the "Mohammedans with blue bonnets," because they wear blue bonnets as well as take off their shoes during all religious ceremonies.

One handsome, intelligent Chinese Jew came forward and introduced himself, inquiring very diligently the reason of my taking the photograph and rubbing of the stone that spoke of the grandeur of his ancestors and their synagogue. I told him that I wished to inform the Westerners, who feel the deepest interest in the Jews, because our Christian religion has come from a Semitic race. The long line of noble men to whom the Jewish nation has given birth, from the time of its founder, Abraham, and the fearless testimony which since the days of captivity it has borne to the lofty truth that there is one God, and none other, must ever give to the scattered people a large place in our veneration and love. Only it must be no blind, but a pure and true, veneration, born of a careful study of all they have been and all they have done. I persuaded him to come to the house, and he unfolded the following remarkable story:

"My elder brother—I am not yet forty years old, but I have thought and talked much with my friends about our ancestors, who were rich and numerous and who worshiped in a fine synagogue, built on the land presented to them by the Emperor Tai-tsu. This synagogue, you know, has been swept away by 'China's Sorrow' [the Yellow River]. Our ancestors came to this land from the northwest nearly three thousand years ago, and had with them a roll of the law that was very ancient and in a language that we do not understand today, because we have no teachers. The beautiful synagogue had a number of courts, and in the center of the first there was a large, noble arch, dedicated to the Creator, Preserver, and Father of all men. The second comprised sacred trees, and the houses of the good men who cared for the buildings. The third had many trees, and on its

walls tablets in memory of our great Chao [a Jewish mandarin judge, who rebuilt the synagogue on one occasion] and other holy men. It was very large and contained the Hall of Ancestors, the brazen vases of flowers and the censors, in honor of Abraham and others. The nerves and sinews were extracted from animals slain for food in this court.

"The synagogue itself was small, but exceedingly beautiful, and in the center was the throne of Moses, a wonderfully carved chair, covered with embroidered silk, upon which they placed the sacred book while it was read. Above the throne, in letters of gold, were wise and good words our ancestors brought from afar: 'Hear, O Israel: The Lord our God is one God, Blessed be the name of the Glory of his Kingodm forever and ever,' and in another part of the synagogue, 'Blessed be the Lord forever; the Lord is God of gods and the Lord; a great God, strong and terrible.' Near the arch on which these last words were written our ancestors always washed their hands except the chief [rabbi], who entered the 'House of Heaven' [a little square room, which none but the rabbi can enter during the time of prayer]. In the 'House of Heaven' the rolls of the law were kept in silken curtains, and on the western wall the Ten Commandments were written in large golden letters.

"Our ancestors suffered many hardships, for the Chinese officials objected, and with force, to their slaughtering animals for themselves. Even today they object to our circumcision, which they denounce as a barbarous and cruel practice. Our lot is truly sad, thrown as we are amidst enemies, unsupported and slowly overwhelmed by our surroundings. We are a pitiful remnant of the past, and there seems to be no morrow for us—the dawn is dark with tears."

I asked him if they had any scrolls today, but learned that the majority had been destroyed at different times; but they did manage to preserve two, one of which they sold to a missionary because they were starving, and the other was blown to heaven in the following manner: One day a foreigner visited this city and asked to see the sacred scroll; but when they opened the ark they found it quite damp and laid it upon the grass to dry. A wind came, and it disappeared into the unknown. The probability is that the foreigner by some trickery secured the scroll, and led them to believe that the wind had carried it off. Early in the following morning eight of the Jews (the whole of the male community) called and gave me much valuable information regarding the Mohammedans and Confucians, who had stolen many things from the Jewish ruins, including the ark of the Sepher Torah, and Jewish tiles bearing sacred inscriptions. This made me desirous of locating and, if possible, securing them. After much difficulty and tipping I persuaded my visitors to be photographed, and then, accompanied by Mr Shields, My Hu (my interpreter), and two soldiers, I visited mosque after mosque, which excited and annoyed the Mohammedans, who mistook me for a Jewish rabbi in disguise.

The fourth proved to be the one I wanted, for in a small room I saw the ark on a table, and made toward it, when the crowd objected and pushed me out, emphasizing their disapproval in no uncertain manner. The soldiers were helpless, but I had a strong suspicion that they were at heart with the mob. The climax came when I clambered on the roof of the mosque and began to examine the tiles, for thousands of Chinese surrounded the mosque, yelling out, "Kick the devil's stomach!" "Batter his devil's brain on the stones!" "Kill the Jew!" "Choke the sinew-puller!" "Tear the foreign devil's entrails out!" and other diabolical things too numerous and too disgusting to mention. The majority were armed with bricks, clubs, or knives and were mad with rage. Every second I thought would be my last, for the fury of the Chinese mob beggars all description.

A happy thought flashed through my

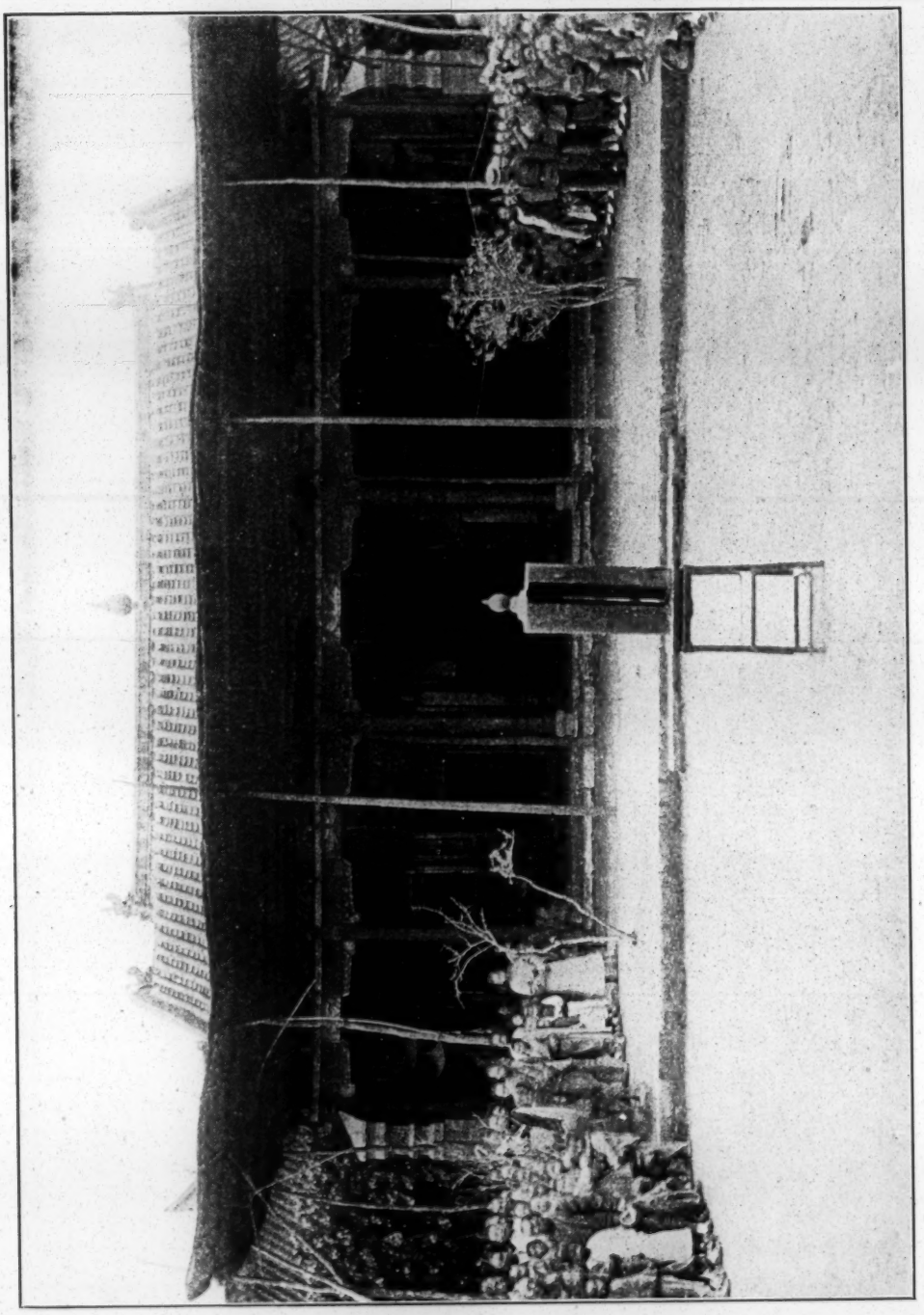


Photo by Inspector Shields

Mohammedan Mosque in which Mr Bainbridge Discovered the Jewish Ark

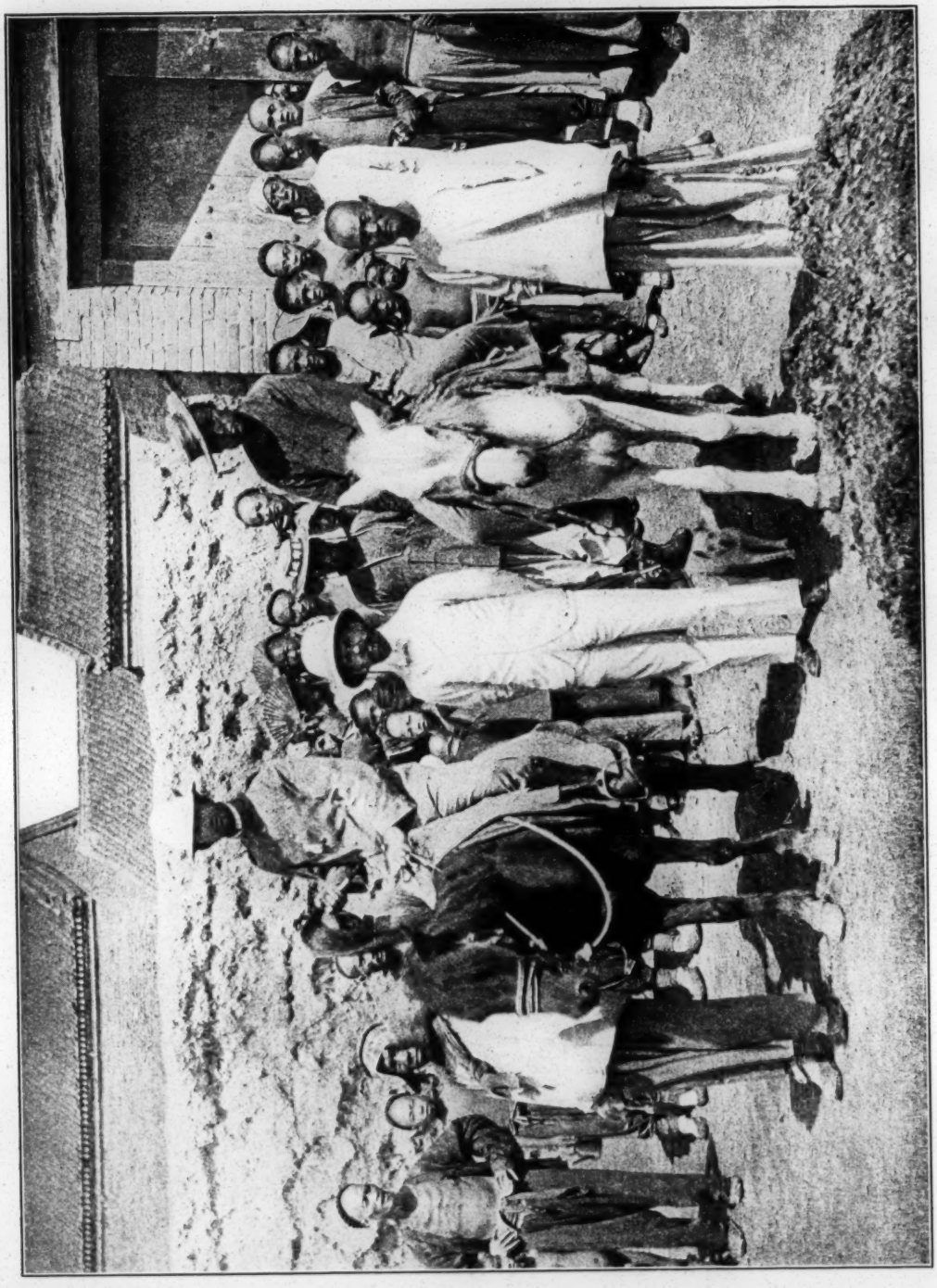


Photo by O. Bainbridge

District Inspector Shields and the Officer in Charge of the Escort on the Site of the Guafofu

mind and, quick as lightning, I pulled out my folding camera and turned it toward them, thinking to photograph the murderous beasts before they butchered me. The shock was tremendous; they dropped their bricks, knives, and clubs, and crushed and jammed one another in their rush from the "devil's glass." My friend, interpreter, and soldiers very discreetly banged and fastened the doors after them, and the interpreter explained to the Mohammedan priests that I was not a Jew, but a British traveler, and only wanted to see these things. They said if I would promise that in the event of the Jewish synagogue being rebuilt their mosque would not be interfered with, the people would be pacified and permit me to see the ark and examine the tiles. They are much afraid their mosque will be destroyed if the synagogue is rebuilt, in order to get tiles which they have stolen. I promised everything they asked.

The ark (an old cylindrical case) is purely Jewish, but the missing scroll they informed me could not be seen, for it was in a secret place. That evening, about eight o'clock, four boxes of sweets, cakes, and two baskets of tea were sent to me by the priests, with the kind greetings of the people, who had decided to present their "elder brother" with the ark, which they did the next morning. When the Chinese make a present they expect something equally valuable in return, so I sent a few dollars to each priest, which proved to be a lucky move, for I experienced no more trouble during my stay.

The Confucians are more kindly disposed toward the Jews than the Mohammedans (who always pull their gowns to one side if they meet a Jew, which in China is a vile insult); and so on visiting their temples I had no difficulty—in fact, one priest accompanied me to a small temple in the southeast corner of the city, where they have what is left of four large marble pillars, taken from the Jewish ruins in the early part of the sixth century. It is interesting to note in Chinese history that at this time the Empress Dowager Ling, attended by the imperial consorts, ladies of the palace, princesses, and others of high degree, ascended a lofty hill and abolished the various corrupt systems of religious worship, excepting that of the foreigner who prayed toward the west.

The broken pillars found in the Confucian temple prove that the synagogue was a place of considerable size and beauty. It did not resemble the great structures of Europe, on which untold wealth has been expended in obtaining the highest architectural art; neither does it remind one of the modesty of the form of supplication. This unique feature, as well as the fact of the chief covering his face with a gauze when reading the laws, points to the antiquity of the hidden tribe, who are but one of the many tentacles torn from the main body of Jerusalem. A short distance from this temple I found an old, long, narrow stone in the side of an empty mud hut, which bore traces of an inscription dealing with a "Foreign heaven chapel," in which the foreigners that "pluck the sinews" fast and weep together. I sent for two of the most intelligent Jews, who were not aware of its existence or location, and I enjoyed their unmistakable surprise.

On the second visit of the Jews to my house I expressed a desire to see their wives and daughters, and learned very promptly that it would be impossible, as the other Chinese women would say "bad things" (the Chinese are undoubtedly the most evil-minded people on earth) and make their lives even harder to bear, but if I wanted to take a photograph (this was suggested with pecuniary anticipations), I might come to an appointed place in a closed cart with a peep-hole, and instruct my interpreter as to how the photograph was to be taken. I embraced the opportunity, and made an appointment for the following day, and secured fine pictures of the Jewish women and children, who had never looked into the devil's glass before. That evening my "elder brother" called again, and one old

man asked me to present a petition (which he handed to me) to the Jews of the West, so that they would fully understand their wretched condition and help them before they are lost in the "everlasting darkness." The moment has arrived for immediate action, not only by the Jews, but by all the Christian bodies; for, when we take into consideration the very significant fact that the whole Christian world is indebted to the Jews for their religion, which is the basis of Christianity, and for the careful preservation of the books of the Old Testament, it would only be a slight recognition of the world's indebtedness to the Jews if this appeal from the center of China receives the consideration it so richly merits.

TIRNOVA, THE CITY OF HANGING GARDENS

By Felix J. Koch

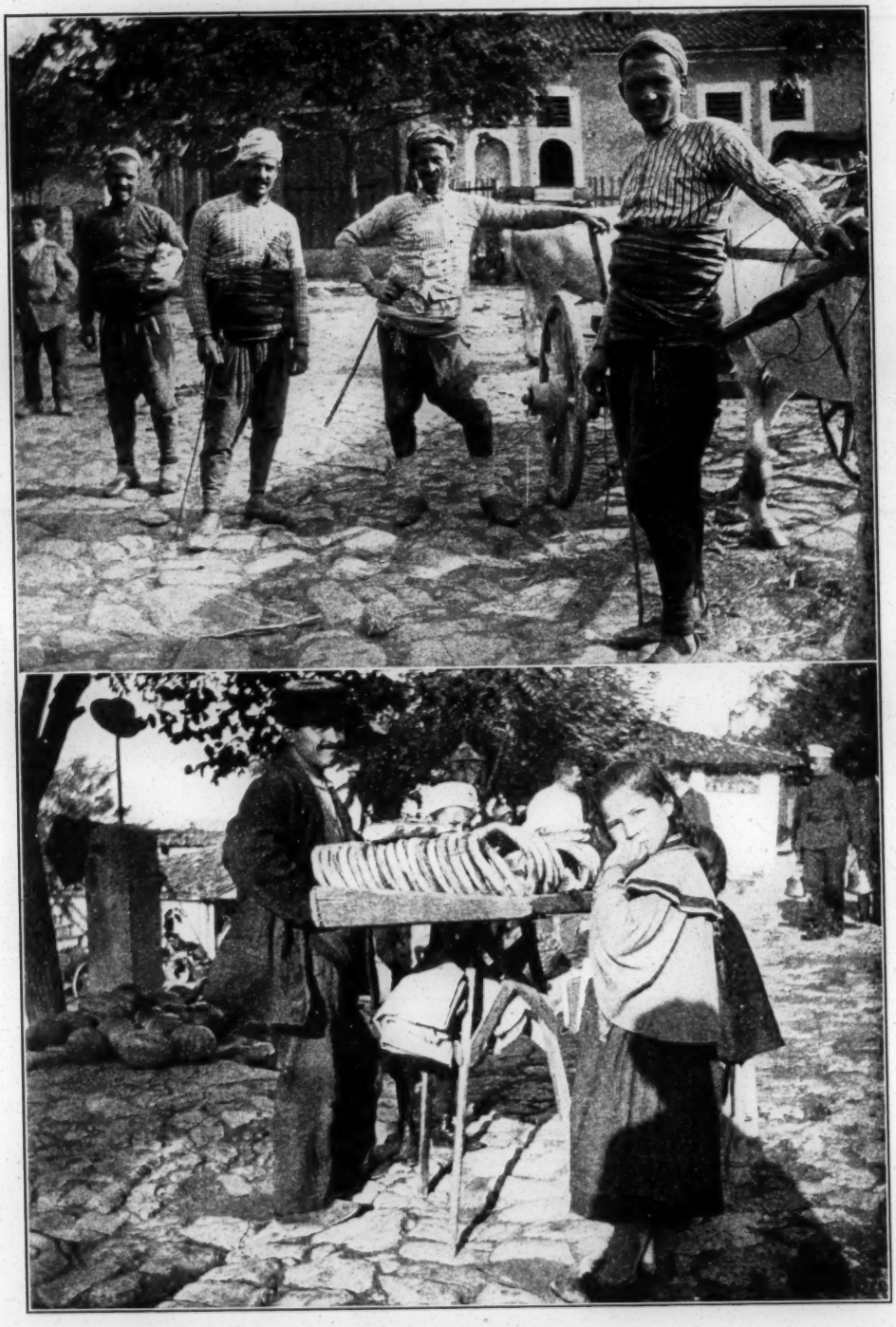
IT was all because of a tourist—a plain, purposeless tourist, who didn't care to travel long stretches at a time, and who I had lured into accompanying me into Bulgaria—that I chanced upon it. We were doing the sites of the Turko-Russian War, just at the time that Port Arthur was hanging fire, and from Plevna the route lay toward Shipka Pass. That is a pretty good trip, judged by Balkan methods of travel, and Friend wanted to break it. The guide book didn't promise much en route, and he "found no opportunity." At last, in a fine-print paragraph of Myer, the Baedecker of southeastern Europe, he "found his opportunity."

"Why can't we overnight at Tirnova?" he pleaded. "Von Moltke calls it the most charming spot in the world. Listen to this"—and he proceeded to read a page or two of descriptives: blue, oriental skies, picturesque costumes, frisking lambs in green meadows, etc. The days were hot, the cars were dusty, the *chef de la gare,* or conductor, an arrant swindler; and, to tell the truth, all Bulgaria is so picturesque one is loth to go through any faster than he must.

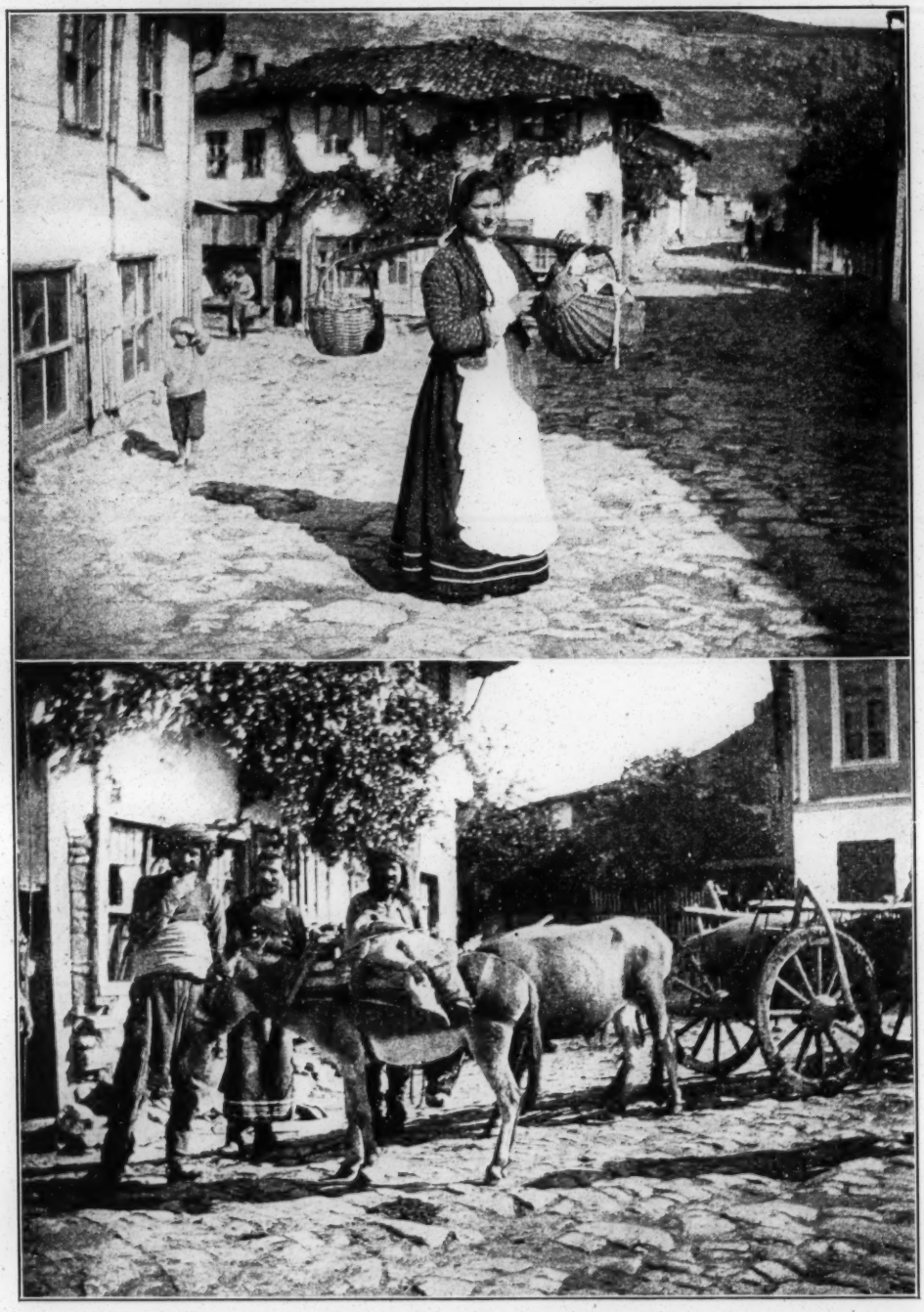
I put on an air of condescension, and said I was willing to try Tirnova. So we bought tickets for the town.

At half-past four we were deposited by the Bulgarian State Railway's trans-Rumelian flyer at Tirnova. The sight was not inspiring. Some meadows; some mountain "go-cabs"—such as I have found at home only in the feud belt of Kentucky—and a mother with a baby. The baby's cap was covered with spangles that were picturesque, and so I snapped a picture of her.

But this did not phase us. Over the Balkans, railways purposely avoid the towns. I am told the custom arose from old Turkish times, when cities paid great bonuses to the railway regime to be avoided, in order that rascally soldiers might not be dumped in their midst between trains. Today, however, I am inclined to believe it is the work of local politicians, in order to give the cabbies of their constituency a chance to make a living at the expense of the stranger. A pretty country road wound off, and down it the cabby bore us—down among partly-forested palisades that stretched to yellow cliffs rising up from a pretty, winding river. Far ahead were other cliffs, and on this perched the town—Tirnova the Beautiful—every house a blaze of color; the roofs of red terra-cotta shingling; the walls painted over in washed-out pinks and browns; the eaves and cornices set in relief by heavy beams that are browned to black by age. Yellows and blues marked other homes. We stopped to take in the perspective—a sec-



Scenes in Tirnova



Street Scenes in Tirnova

ond Naples from the sea—for here, too, the homes are three and even five stories high, a most rare architectural form for the Orient.

We rounded the hill, one of the two steep palisades upon which Tirnova stands, and drew up at the Boris, the Waldorf-Astoria of Tirnova. In my journal I set down my first impression of the house as "nice, but primitive." A correspondent takes notes as he goes along, and it is interesting to see how his opinions change with the fleeting hours. We followed the German-speaking host up one of those quaint winding stairs that recall to an American Tom Corwin's home, and secured a room, a chamber with a charming view over the Sorrento of the Balkans.

Then the tourist and I ventured out to "do" Tirnova. From our window we had solved its peculiar topography—the town stood on two sides of a gigantic mountain, into the valley at whose base another mountain jutted, with the remnants of the suburbs. It was from these slopes, then, that the houses rose, narrow and tall, and of every contour, as they stood in tiers, ever higher, along streets that zigzagged and ambled, so that one never quite knew if the destination was the top or the base of the mountain. Consequently houses stood at the upper side of the roadways only, and as one saw the passing burros from below they appeared to be threading the housetops. The illusion was a most distinctive one, reminding us of the grazing donkeys of Iceland, who inhabit the roofs of their masters' cottages. There was another curious feature to these buildings of Tirnova. Usually the Balkins are not overly generous in the matter of windows, and here especially, where the window-panes are of the many-divided varieties abundant in New England a century past, and are set double against the cruel upland winters, the number of windows might be taken as an indicator of the size of the purse. But it matters not, with rich or poor, on that side of the house which faces the beautiful river —and the side is usually the rear—windows are ubiquitous, and to those of us accustomed to the Turkish bazaar, to find windows in the rear wall of a Bulgarian booth comes as a decided surprise. At these windows, and at those beside the street itself, lace curtains, or curtains of a native reed matting, painted in gaudy figures of forms animate, hang, making even quainter the scene.

The great charm of Tirnova, however, lies in its balconies. Every home—and it must be remembered that store and home are synonymous in the nearer East —has a door, very largely of window glass, in the center of the second-story front, opening upon a little balcony, where oleander shrubs in heavy green tubs blossom the summer through. There the lady sits to sew, or to watch her little ones, or to lean down and chat with passing neighbors. At either side of the balcony is a single window, and in rainy weather she retreats to these. Strangely enough, at Tirnova homes of the rich are limited to two stories; it is the poor who inhabit the tenements, the four and five story structures. But to return to the balconies. Many of them, not content with the oleanders, will have an arbor of grapevines stretched over them, so that the Bulgar dame may sit enshrined in a bower of foliage, from which she may pluck at will the juicy pendent bunches, casting the hulls down on the passer on the narrow sidewalk, or oftener in the comparatively broad street below.

But we are picking Tirnova to pieces —analyzing it, and that robs it of the charm of the *ensemble*. We must ramble out of doors, here and there, in and out, in this Nibelungen-land, noting this and that as it comes and goes, to enjoy the whole. Let us follow the street as it may go. At one hand the houses rise dense, owing to the varying heights and forms, and here the gilded cupola of a Bulgar church breaks the monotone. Now we descend the hill, and upper stories overhang, as they do at Nürnberg, but here so close as almost to touch the neighbor's wall, and we walk

in perpetual dusk. We emerge on an open square, pass a landau covered, as is the Balkan custom, with white linen covers inside; continue toward the barracks and to the market-place, a structure of lattices bisected for stalls, and then reach the heart of the city. We look back and catch sight of the roof-gardens. The tenement-dwellers have the second-story balcony, too, but there are no balconies on floors above, and so they must needs take their airing and their week's washing out upon the roof. There, among the shrubbery, people sit, as do our own fashionable New Yorkers thousands of miles to the westward.

The street is growing uneven now, owing to the flagstones loosening, and in places a step runs across the way, and we find its elevation changed considerably. Here there are stores of caps and shoes; there are kavanas, where the Turkish coffee is served in handle-less cups; and there are other shops presenting but two doors, and not a window to the street, and on their doorsteps the "Jew geranium" blossoms, for these folk are inordinate in their love for flowers. Up above, the balconies are growing richer now—the posts with the strands of drying onions are replaced by graceful iron-work, but we are still among the trades people of Tirnova. Here is a bake-shop, one wall almost open to the road, showing the whitewashed earthen oven, and the booth with the round, half-brown loaves of bread. Next store is a money-changer, a most necessary factor of Balkan life, where there is the coin of so many countries ever current. Four cents on $1.80 is the rate he charges us, and he is most satisfied with his commission. Beyond are bazaars with eatables and more with hats and clothings—stores with slippers and costumes—and in all of them the friendly natives, only too glad to let the "Amerikansky" look over their wares, if they may be permitted to stare at him in return. Bulgaria may be a brigand land, and there are parts of the southern frontier where it must be admitted we did not feel any too safe, but Bulgarian people as a whole are among the friendliest in the world to the stranger within their gates.

We turn into a road of cobblestones not five feet wide and take to the heights. The lowest story of the houses here is windowless, built of stone and mortar, with heavy wooden doors and heavier iron knockers, and a tiny barred window-let at one side of the entry, to serve as peep-hole before admitting the visitor. It reminds one of Ali Baba and the Forty Thieves, to see the donkey trains stop before these doors, while curious, turbaned muleteers knock and await admittance. Here the upper, slightly protruding second story is of plaster over lathwork—white save for a stripe of blue along every corner, or else left the hue of the dried mud that coats the laths, and adorned by Maltese crosses of pine beams. Here and there the lattices bespeak a Turkish harem; but the Turk has almost evacuated Bulgaria, and his call and his costume are rare. Out of this quarter, and in the next, the windows come still higher up the wall; the houses face sidewise, as in Roumania, and upon little gardens among the flagstones, and we come out on the tall, tapering fire-tower, the "center" of a Bulgarian town.

The view from this point and from a slight bluff just behind is one that is incomparable. Not even Naples at sundown, nor the Georgian Bay, nor the Bocches di Cattaro, can leave such a lasting impression as this; for they one and all lack the tintings of color that these tiers of homes on either side present, with the mountain frowning up beyond and an ancient Turkish mosque, of the sort that old Bethlehem has in the pictures, on the crest of its slope.

There was a tempting little tavern here, and we dropped in to taste of the native beer and the undried figs that the place afforded; then we continued the pilgrimage. We had found the East at last, the East of story books. The alleyways grew ever narrower—in fact, so shrunken that in spots men with the yokes for bearing water barrels on their

1. Going to Market 2. The Last of the Turks

shoulders could scarce pass. Where they broadened, verandas appeared on the street side of the houses, and there were little windows, into which we might peer, upon whitewashed rooms, with iron bedsteads and a few sacred pictures.

Some schoolboys, playing in the shadow of a garden wall, sprang to attention and saluted as we passed, and we noted their caps, the rims of alpaca, the top a flat piece of scarlet cloth, with a Maltese cross of gilt. Both boys and girls wear a set form of clothing in Bulgaria, altered just a trifle, according to their grade; so that if mischief is done by the young, one needs only to go through the particular schoolroom to find the offender. This uniformity likewise does away with the envy between poor and rich.

Again, a peddler passes by, but in Tirnova both these and the beggars are few. Peasants in costume are met now and then, though European dress has the preference.

In a booth, among the number of local views offered for sale, we find a souvenir post-card with the profile of Roosevelt. In contrast, pictures of Prince Ferdinand are decidedly rare; and yet the Prince is quite popular.

Tirnova is closing her shops for the night. The strings of flat, red, dried sausages, suspended before the booths, like a row of the seeds of the thorn tree, are being taken down. An army officer, in coat and cap of white and blue trousers, takes his roast of mutton, and the butcher shuts the door. The manna in the fruit stores is being stowed away, and where fancy candles are on sale a Turkish woman, her face covered save for the space between upper lip and eyelids, scurries by, intent on one last purchase. One building, much like an arcade, but open to the sky, houses a series of stores, and these, too, are closing.

We were going to enter some of these when Friend, in that convulsive way of his, grasped me by the arm.

"Look! Oh, look! *There* is the Pride of Bulgaria!" and he sighed nervously.

I looked in the direction in which his finger turned, and there, on the balcony, was a Madonna of the Balkans—one of those rare beauties of the south Slav race, which is not especially noted for its beautiful women, who linger in one's memory long after every other iota of their towns and homes has been forgotten. My Lady of Tirnova was a subject for the artist's brush, as we saw her, framed by the window of a quaint three-story home of pink, and with the flowers of the portico forming the base of the picture. Her eyes were of the brown-black of the lower Balkans; her skin was tanned to olive; her face had the smile of an upland girl, and her hair, parted in the middle, was of the hue of the raven. She was indeed a Juliet for a Balkan Romeo. Nor would she be party to the least flirtation, but, catching our eyes, she turned her head, showing a half dozen tiny braids emerging from the rear of the head-kerchief, and disappeared into the chamber. Friend went into the bakery below and bought a loaf of native bread "to nunch," he said, though he fed the greater part to the pigs and the ponies we met on the Prince's highway; but I forbore to question, save to remark that the native folk were watching us askance at such extravagance. Bread is four full cents the loaf in Tirnova.

Three schoolboys, speaking French, followed us, and then became our guides, taking us where old Turks argued in the meat bazaar, among hanging, dripping sides of lamb, and where the ox teams drew the heavy carts into the noisy smiths' quarter, where countrymen, in turbans and striped shirts and bloomer-pants, brought their ponies to be shod; and then to the very outskirts, where the African buffalo is seen, nestling beside the carts to which he is hitched, while the peasant does his errands in the town or, later, builds his camp-fire at the bison's side, and, gathering his family about him, roasts the piquant paprika (the mango, or good angel of the Balkans) and drinks his wine, the scene resembling most a prairie encampment in our own

Peasants Visiting Tirnova in Their Garments of Lavender

West, back in the days when the Republic was young. Friend, however, was not interested. Juliet's image still hung in mist before his eyes. Not even the army officers at the fort, one of whom had been in New York, could shake off the dream; and so we turned to the hotel for supper; then I to the note book and he to—bed, while a graphophone on the floor below pealed out snatches from Carmen.

GEOLOGISTS IN CHINA

THE Carnegie Institution has just published the first two volumes of the report of its geological expedition to China in 1903-4. The report is entirely technical, being intended only for the information of geologists. But the authors have included a large number of unusually handsome illustrations, which give a general interest to the work. Through the courtesy of the Carnegie Institution, several of these pictures are printed in the following pages. With the exception of the extended geological research in China by Baron Ferdinand Von Richthofen, thirty years previous, this expedition by Messrs Bailey Willis, Eliot Blackwelder, and R. H. Sargent is the only geologic exploration of China that has been made, and the results obtained give the report unusual value to geologists.

MAP OF AFRICA

THE December number of the NATIONAL GEOGRAPHIC MAGAZINE will contain a large map of Africa, 15 by 20 inches and in seven colors. The map will show the latest explorations, giving the routes of the principal explorers of the continent, and also the possessions and spheres of influence of each European power. It will also show all railway and telegraph lines, constructed and proposed. In view of the recent rapid commercial development of nearly all sections of Africa, and present interest in Morocco and the Kongo, it is believed the readers of this Magazine will find the map particularly useful.

Photo by Bailey Willis, Carnegie Institution

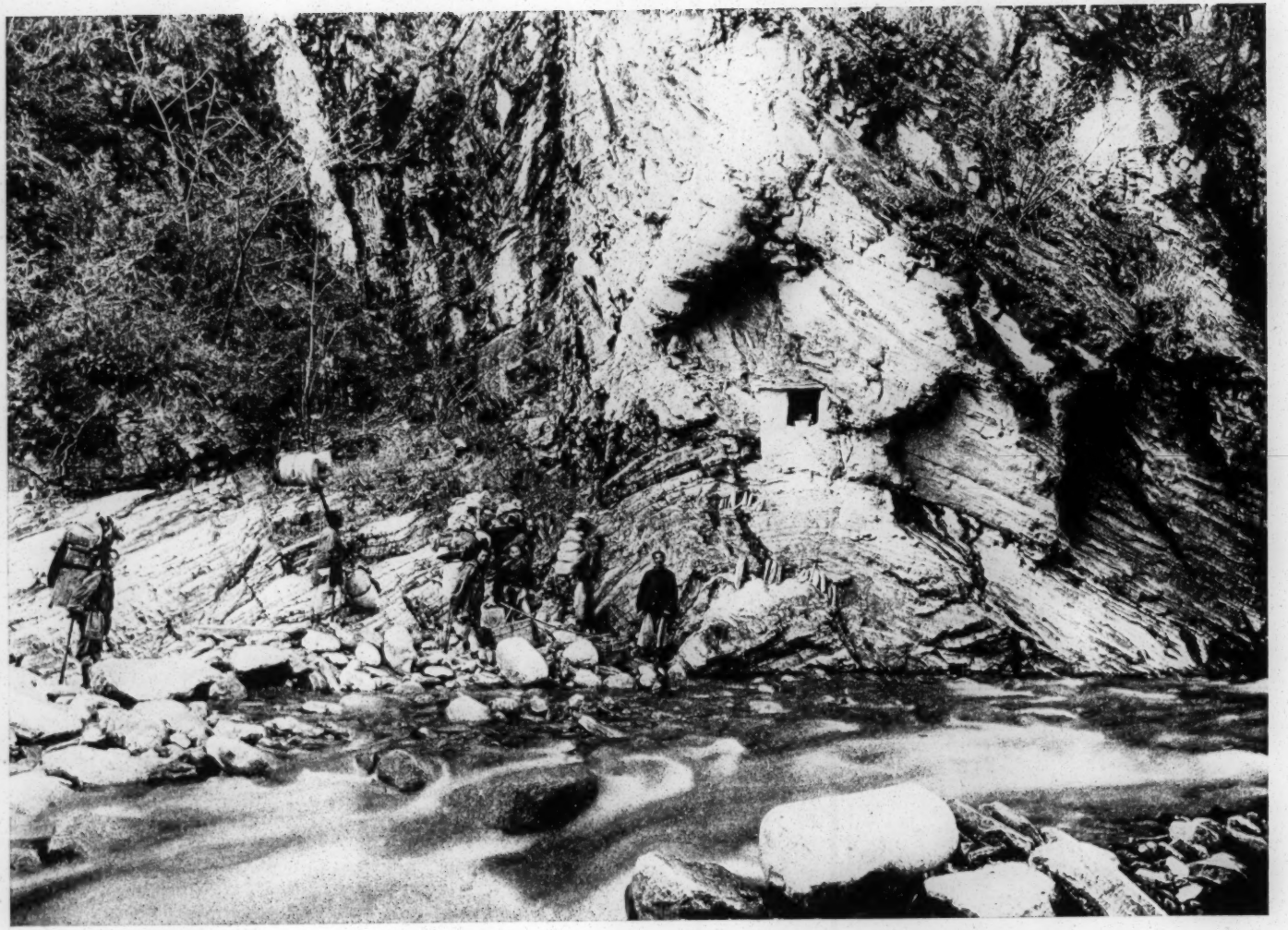
Cultivated Terraces in Central China

Photo by Bailey Willis, Carnegie Institution

Four Shensi Soldiers of the Governor's Guard, Central China

Photo by Bailey Willis, Carnegie Institution

Interior of Temple to K'wang-sheng-ti, the Great Warrior of the "Three Kingdoms" (221–265 A. D.)



In Canyon between Siau-wang-kien and Chiang-k'ou-shi, Shen-si

View of outcrop of slates of Hei-shui series. In the shrine on the cliff is a small idol and the stones set on end are offerings to the spirit of the dangerous ford. Coolies of the expedition. Photo by Bailey Willis, Carnegie Institution

Photo by Bailey Willis, Carnegie Institution

A Device Erected Before the Gate of a Chinese City to Ward Off an Evil Dragon

In a Date Orchard, Biskra, Algeria

Photo from David Fairchild

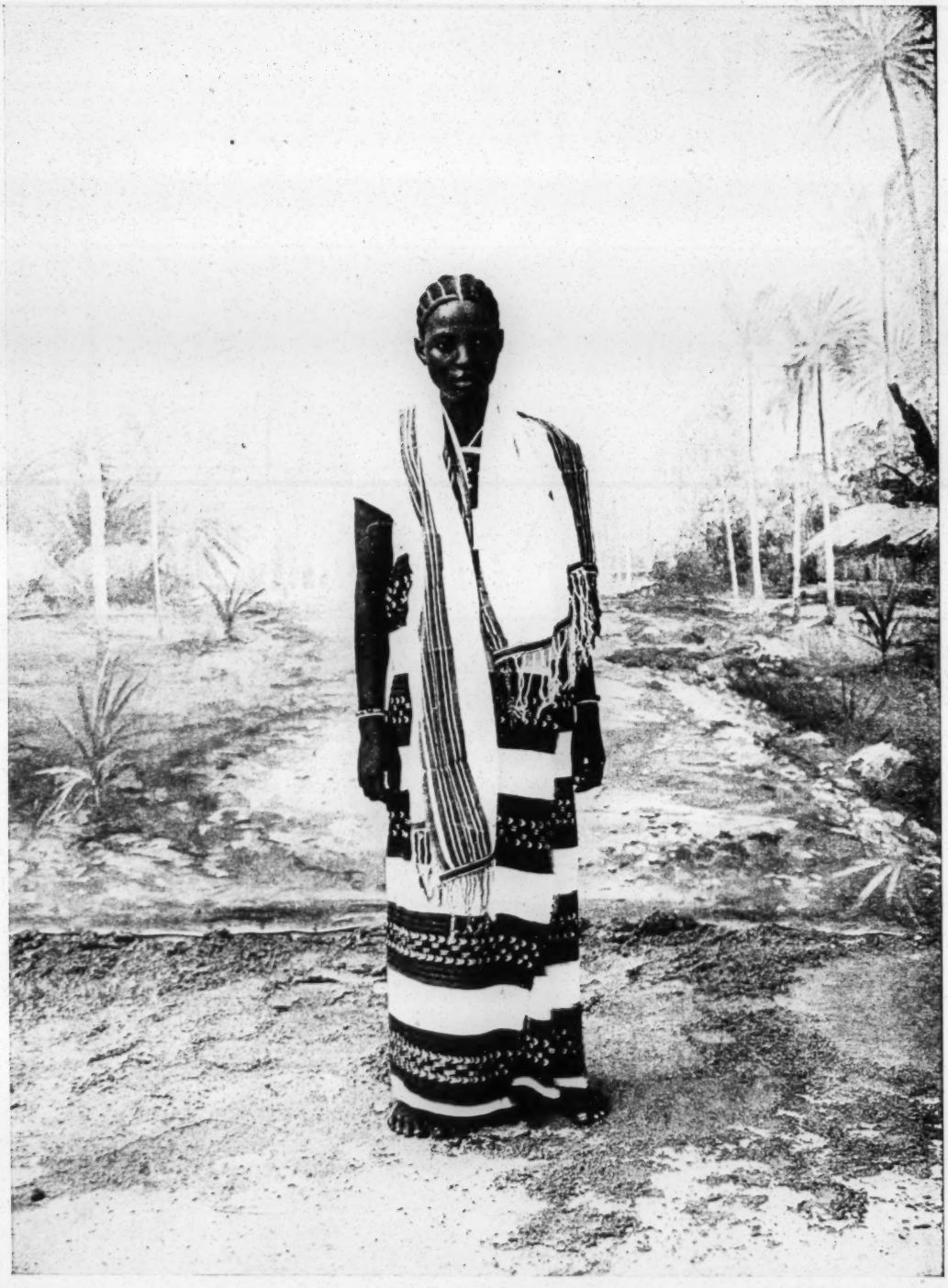


Photo from David Fairchild, U. S. Dep't of Agriculture

A Zanzibar Maiden

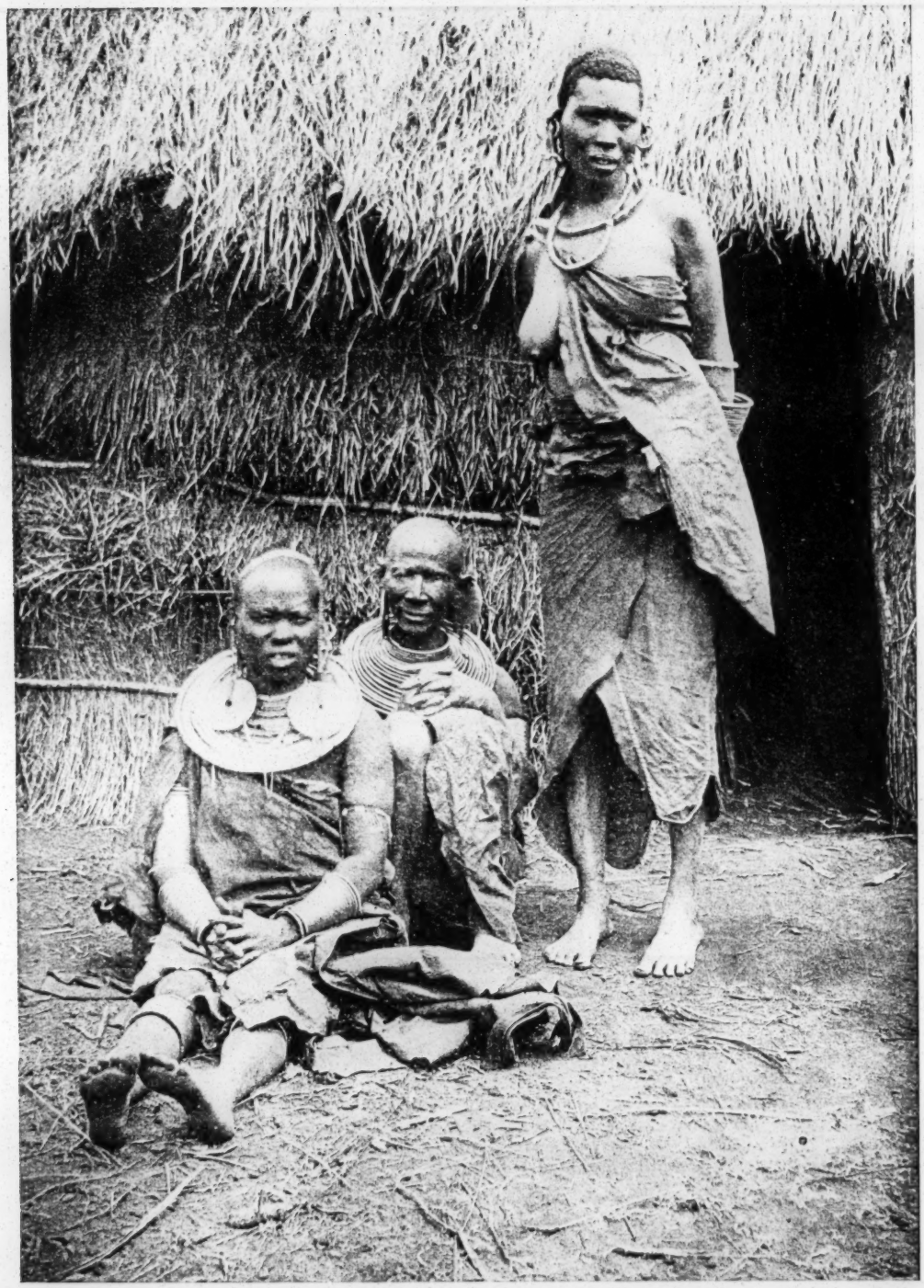


Photo from David Fairchild, U. S. Dep't of Agriculture

In German East Africa

Photo by Thomas H. Kearney, U. S. Dep't of Agriculture

An Unusually Fruitful Date Palm, Tunis

The heavy bunches of fruit have been "straddled" to prevent the breaking of the stalks

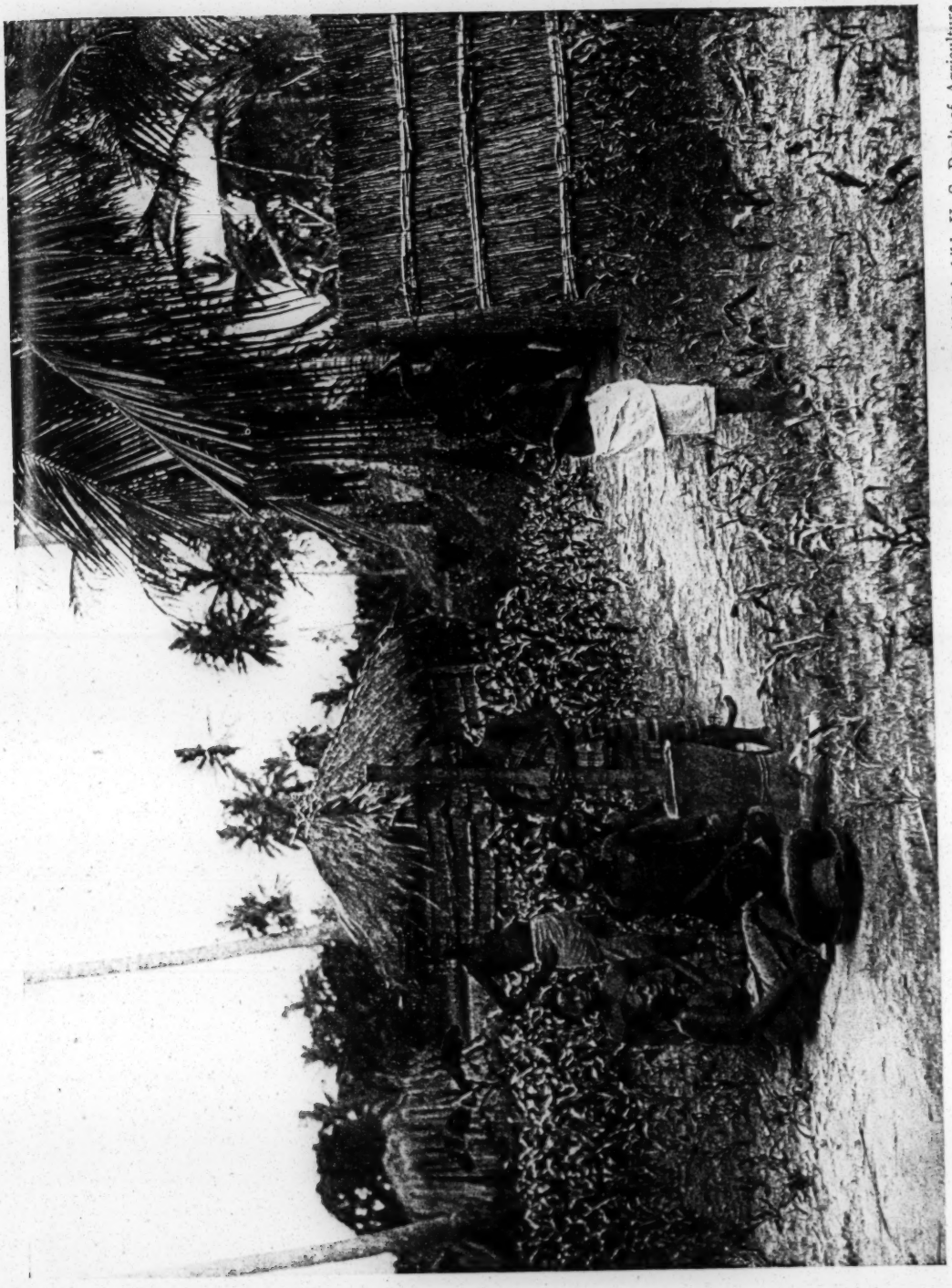


Photo from David Fairchild, U. S. Dep't of Agriculture

A Native Village, German East Africa

KOYASAN, THE JAPANESE VALHALLA*

By Eliza R. Scidmore

THE Japanese Valhalla, the national necropolis, the greatest graveyard in the Empire, is in the sacred green grove of cryptomeria crowning the summit of Mount Koya, in Kishiu, some forty miles east of Osaka, in the heart of the oldest Japan. The site was chosen eleven centuries ago by Kukai, the Tosa priest, best known by his posthumous title of Kobo Daishi, a most conspicuous and interesting figure in early Buddhism.

Kukai had a miraculous birth, an exciting novitiate, and, being sent to China as a government student, he succeeded to the mystic and occult doctrines of the yogi sect, as brought directly to China from India by two Hindu patriarchs and transmitted through seven chosen abbots to himself. Before he left the seat of continental culture and learning, with his sacred books, pictures, and articles of temple service, he hurled his mace, or *tokko*, in air, and it flew through space to land in the branches of a tree on Mount Koya—like the golden torje at Lhassa, which flew through the air from India. Guided to the spot by the celestial radiance streaming from the tokko, Kukai fulfilled his vows of building a temple there, and for the final years of his life he taught the mystic Shingon doctrines, the occult, secret laws, in the mountain-top monastery.

One meets memorials and traditions of Kobo Daishi in every part of Japan, but at Koyasan he is naturally all-pervading and supreme. That forceful person could have known no rest during his brief span of sixty years, for ten men could hardly have built all the temples and the shrines, carved the statues, painted the pictures, planted the pine and camphor trees, climbed the mountains, lighted the lanterns, started the sacred flames, or performed all the miracles attributed to him. He lived and moved in an atmosphere of the supernatural, it would seem, time doubtless adding to the number and quality of his miracles and attaching any stray miracle to his credit. It was his early manner, or first style in building, to construct a temple in a single day, bidding the setting sun stand still and light the workmen at their tasks—and in proof one such temple is shown intact today on the shores of the Inland Sea. At Nikko he persuaded the mountain priests and saints that their rude deities and Shinto spirits were but manifestations of Buddha. He raised temples and shrines there by the score, and hurled his brush across the Daiyagawa to write a Sanskrit word on an inaccessible rock, which every tourist may see distinctly to this very day. An image of Fudo which he brought from China was carried to the seat of domestic war, and after three weeks of ceremonies and incantations by a great body of Shingon priests, the rebels were overthrown, and the image remains the object of universal pilgrimage at the great temple of Fudo at Narita. He once exorcised dragons by spitting at them the rays of the evening star, which he held in his mouth, and he cast magic spells and transported himself, or his astral body, at will. His followers believed the great yogi to be the reincarnation of one of Sakya's disciples, and the scoffing priests of other sects were in time so dismayed by his miraculous power that they were converted, bowed to the pious juggler, and flocked to his temple of Toji, in the

* Article and photographs copyrighted by the National Geographic Society, 1907.

southern quarter of Kyoto, to be taught the mystic doctrine.

Priest and Women Pilgrims to Koyasan

HOME OF MYSTICISM AND MAGIC SPELLS

While his powers and vogue were greatest he removed to Koyasan, whose seclusion was better fitted for the teaching and practice of yogi doctrines, the meditation and prolonged contemplation of the abstract that induces occult power. There mysticism abode. Incantations, magic spells, crystal gazing, and hypnotic trances, engrossed the company of expectant bodhisattvas, who in this coldly analytical day would be termed a company of neurotic priests, worn by fasting, exposure, and sleeplessness until subject to extreme hallucinations. It was a seminary for secular learning as well, since Kobo Daishi had brought back with him all the arts and culture of the Tang dynasty, when Chinese civilization was at the height of its greatness. Arts and letters were intimately connected with the new religion and the Buddhist priests were the disseminators of all Chinese culture. The monasteries were so many academies of continental learning, and the Emperor and his court were fervent disciples of the Chinese-taught philosophers. As painter and calligrapher, Kobo Daishi was foremost in his time, and his greatest service to his country was the reform of the syllabary, the introduction of the *hiragana*, by which forty-eight of the commonest signs were arranged in a fixed order—the whole syllabary giving the sense of one of the sacred Sanskrit sutras. For the benefit conferred by the new alphabet, he is regarded as the patron saint of calligraphy and the literary art, the deity invoked by all poets, painters, authors, and toiling schoolboys.

100,000 PILGRIMS EACH YEAR

After a strenuous life of sixty years, he announced the day and hour of his death. A great conclave of priests assembled, and at the prearranged time the great abbot passed from meditation to trance, and was borne to the waiting tomb, where he sits today, sleeping in the peace of Nirvana, until Maitreya, the future Buddha, shall come. For this reason the Shingon Buddhists have believed that those who lie beside Kobo Daishi at Koyasan shall waken with the sleeping saint, the entranced yogi, and with him pass to the Great Pure Land.

After the lord abbot had fallen asleep on Koyasan in 838, he was canonized, given the posthumous title of Kobo Daishi (Great Teacher Spreading about the Law), and his tomb became a popular place of pilgrimage. One hundred thousand pilgrims visit his mountain-top tomb each year, and ten thousand and more climb the heights on the death anniversary, April 26. Many wait for that day to carry with them the tablets and ashes of those whom they would have translated to the future heaven with the saint, to Jodo, the Pure Land of Perfect Bliss. Even very aged people will insist upon the pilgrimage when they are unable to

The Images of Jezo, Benten, and Fudo

To throw water over them benefits the souls of ancestors (see page 663)

walk, and are hauled by ropes up the steep paths, with zealous children supporting them, lifting and placing their feet for them, since real merit cannot be acquired if one does not make the ascent on foot.

EVERY GREAT JAPANESE FAMILY HAS A MONUMENT AT KOYASAN

Every great family in the Empire has a monument or cluster of tombstones at Koyasan; the humblest may freely go and cast a fragment of a cremated body into the well in the Hall of Bones beside Kobo Daishi's tomb; and *ihais* or mortuary tablets are deposited by thousands in the temples and monasteries on the mountain summit, where there are morning and evening services in honor of these dead souls. The poorest go in pilgrimage with staff and bell, carrying a bit of incinerated bone to cast into the deep pit or ossuary, and the greatest repair there with all the state and trappings of luxurious woe to inter precious ashes or celebrate death anniversaries with splendid service.

A nobler setting or more splendid surroundings could not have been chosen for the group of temples that grew with the centuries in the midst of this forest primeval, for the *Koya Maki*, the species of evergreen cryptomeria peculiar to this mountain, lifts a rough reddish trunk high in air before branching, and its needle foliage is bunched in dark, blue-green masses that form dense canopies of shade. The vast cathedral aisles of Koyasan are rivaled only by the majestic avenues and Druidic groves of cryptomeria at Nikko. A great fire in 1844 destroyed the noble five-storied pagoda, the Kondo, or main hall. In 1888 a second great fire raged for two days and swept away priests' houses and small structures by the acre. In spite of such disasters, Koyasan still possesses many unique and splendid structures and

remains a treasure-house of ancient art. Koyasan's first temple was but the central one of a great group of monastic establishments that were gradually built round it, and the green grove rang with the voices of many thousand priests chanting the sutras night and morning in a thousand shrines. To found a monastery and mortuary temple on Koyasan was an act of great merit and the height of all religious ambition. It was the chosen asylum of those who would forswear the world, a refuge for retired and abdicated rulers, and its cemetery became the haven of heroes, the abode of saints, a hall of fame. Riches and revenues, lands and treasures, were heaped on the mountain communities through all the ten centuries before the Restoration. Every distinguished name in Japanese history, letters, and arts is graven there somewhere, either on the tombstone in the great cemetery or on the tiny *ihais*, that are ranged by thousands in the halls of tablets attached to each monastic establishment. Night and morning big bells boom and silvery gongs ring the call for services for these departed spirits; sacred flames burn continuously near them, incense rises, and fresh offerings are made each day.

POVERTY AFTER CENTURIES OF UNTOLD WEALTH

Held sacred for eleven centuries, Koyasan knew only honor and an increasing accumulation of wealth until the Restoration, when, with the downfall of the Shogun and the disestablishment of Buddhism, neglect and impoverishment came to the priestly commune. The lands were taken away, the rice revenue and tribute ceased, visitors and pilgrims were few, and the offerings scant. An anti-Buddhist governor ordered the closing of 1,000 monasteries, whose buildings and contents dropped away in mould and ruin. The contemplative brethren, who had never known rice-winning, production, nor industry of any kind, soon faced starvation. Beside the riches in statues and paintings with which Kobo Daishi himself had dowered the place, rulers, princes, and worshiping visitors had given it masterpieces of contemporary art; many rich collections were left the temples to secure perpetual services for the repose of the owners' souls, and the treasures stored in the two thousand temples and their godowns were incalculable.

The Restoration seemed to have sounded the downfall of the great establishment. Old priests died of discouragement and hardships, some priests returned to their families, others went out to active lay life, and the diminishing company on Koyasan's summit eked out a bare existence. The occasional surreptitious sale of a painting or art object from the enormous store of such gifts accumulating and lying unused for centuries supplied their immediate necessities. Enthusiastic purchasers boasted so loudly at the capital of the treasures of art they had acquired in temples in the hinterland that suspicion fastened upon Koyasan. An imperial commission was deputed to visit Koyasan, investigate, catalogue, and photograph what remained—all such objects thenceforth to become definite and inalienable "treasures of the Empire." It was then that the great fire of 1888 providentially destroyed neglected monasteries and godowns suspected of spoliation. Koyasan's treasures have especially enriched three great collections in America, and serve a noble purpose in spreading abroad the superior glory of oriental art.

The remote, mountain-top monastery and necropolis has best preserved its ancient atmosphere to this garish day of progress; has longest retained its sacredness and seclusion, its atmosphere of old Japan, and of true religious calm. In those Druidic groves contemplation, meditation, and sacred offices seem naturally the sum and end of daily life. It is the most elevating, inspiring, and deeply touching place of religious pilgrimage in all Japan, and until the storm-time succeeding the Restoration, the rigorous Buddhist rules forbade women to set foot upon the sacred mountain—for which

reason, probably, they are the most zealous and numerous visitors now. Before Dr Dresser's visit in 1878, who went at the request of the Japanese government to view its art treasures, only three foreigners had visited Mount Koya, and their numbers were rarely equaled for many years afterwards. Until the railway penetrated the valley of the Kinokawa, there was a long jinrikisha ride of forty miles preceding the steep climb on foot or the penitential ride in kago for nine miles up the steep side of Koyasan.

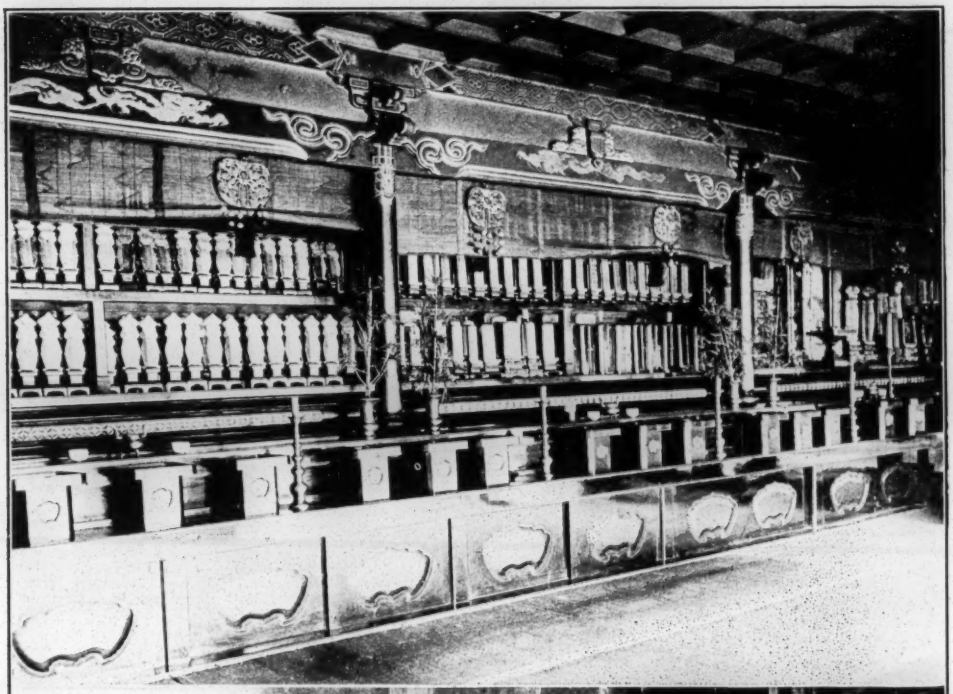
The last part of the ascent is very steep. It needed all of Kobo Daishi's engineering skill to lead the path up by forty-eight turns. Wherefore it is called the I-ro-ha-zaka, in allusion to his arrangement of the syllabary beginning with those characters. The kago, which is a luxury of comfort for the Japanese, with their flexible, well-trained joints and philosophic, acquiescent temperament, is a penance for all his sins to the foreigner with his useless bulk and unaccommodating knee-joints, and he is usually willing to acquire merit by climbing that last half mile of the I-ro-ha-zaka on foot.

A rude temple to Fudo guards the black back gateway, and everyone pauses. A discriminating pair of priests appraise and classify arriving pilgrims, and one is billeted, as his consequence and quality or his credentials declare; either to the gold-walled, silk-bordered mats of the abbot's palace, to lesser monasteries, or to the plain houses for the plainest people attached to the plainest establishments. The unknown foreigner and his professional guide are usually assigned to the least pretentious places, bundled in with Osaka shop-keepers, and rated with the lower middle classes generally. Save when he comes directly accredited by some other religious establishment or official patron, the rooms closed in with priceless gold-leaf screens, with Chinese paintings in the recess of honor, are not for the casual barbarian, with his clutter of baggage and belongings, his lunch basket, his coffee-pot, his greasy stuffs, his innumerable tools for eating, his disorderly, crumb-scattering habits, his monopoly of a whole room for his one inferior person. The priests expect all visitors to conform to the strict rules of monastic life and their vegetarian diet, since all who come are entertained without charge.

THE SERVICES IN THE CHAPEL

While we dined in space and seclusion, conversation toned down by our religious surroundings and great fatigue, a merry chatter came from rooms beyond, where assembled visitors were grouped sociably at the evening meal, all of whom had walked the steep miles up the mountain, bringing tablets or relics. When the Taiko's great bell boomed softly nine times from the fortress-like bell tower, there was a scurrying of feet and banging of screens, and the priest came to request any visitors to withdraw, before the outer gate was barred for the night. The clear ringing notes of a small silver gong summoned all the monastery company to the chapel for the regular evening service or mass for the dead souls whose tablets are guarded there.

We followed our young priest to the two halls of service, each with elaborate Shingon altars, richly painted ceilings, with ranks and rows of gold-lettered ihais completely hiding the walls. Some ihais were enclosed in reliquaries, and food offerings were ranged on shelves below all the ihai. A frieze-like curtain of gold brocade surrounded each hall and long banners and strips of the glistening fabric hung against the pillars and columns, all finished with gilded bells and metal ornaments. The head priest, in his yellow robes, over which he had thrown a brocade cloak (*kesa*) of flame color shot with gold and caught with huge purple cord knots, sat beneath a red and gold baldachin, with the low table before him covered with an elaborate Shingon altar service. Five priests on either side sat statuesque in ceremonial dress, chanting responses and striking silver-toned cymbals at intervals. The high priest



The Hall of Tablets at Shoji-shin-in
The Treasurer and His Assistants

The Fireplace at Shoji-shin-in, an Invention of Kobo Daishi's (see page 666)
Kobo Daishi's Golden Tokko; Other Tokkos and Bells

read the sutra and the acolytes responded, and for a half hour after there continued the rhythmic, sonorous chant, broken now and then with a short obligato from the immovable head priest and a clash of silver cymbals. The head priest laid incense on the coals in the golden lotus cup, and one by one the ten priests advanced and reverently added to the perfumed cloud that dimmed the room. Five visitors, who had come to engage a special mass or memorial service for the repose of the dead souls of relatives whose tablets are kept in the monastery, had continued a fervent repetition of the name of Buddha throughout the mass.

After the regular vesper service for all the tablets this little family group drew near the priest, made an offering of money in white paper, and with a second special chanting of sutras and burning of incense the five mourners were made happy. Receipts written on large papers were given them, and as thicker incense clouds rose the acolytes began extinguishing the candles, until only one perpetual flame, a tiny wick in a saucer of oil, was left in the temple for the night.

At five o'clock the next morning the booming of great bells far away and the clear silver strokes of the chapel gong summoned the priests to a similar service for the repose of the dead souls. Soon the measured chants and the ring of the silver gong rang upon the sunrise air; then the thump of stockinged feet on echoing boards told that the faithful were returning from the chapel, and the buzz of voices began again in the guest-rooms and refectory. Later, the acolytes set fresh cups of tea and bowls of rice, new pyramids of fruits and shreds of food before the ihai, and the halls of tablets were left in silence until the vesper service.

SEVERE DISCIPLINE, FASTING AND VIGILS

This Shingon (True Words) sect, which Kobo Daishi founded, retains its original features as it came from China, and its ritual and symbolism, its mystic signs, gestures, finger manipulations, and practices, are derived most directly from the Hindu. By the mastery of the True Word and of the secret laws of body speech and thought, the Shingon priests believe they may attain Buddhahood while in their present physical bodies. Like Kobo Daishi, they practice the most severe discipline, endeavoring to reach the higher stages and perfection by prolonged fastings and vigils, by the continued repetition of sacred words and formulæ, by the contemplation of sacred pictures and crystals and by the contemplation of the abstract and absolute. Passing into the trance or hypnotic stage, they have transcendant visions and they enjoy supernatural powers. All the mysticism and ceremonial of northern India and China are embodied in Shingon doctrines and rites, and the most profound European students of Japanese Buddhism openly say that the Shingon doctrine is as well nigh impossible to comprehend as it is to express it in comprehensible language.

In the Shingon sect the same household marks and symbols are traced at the doorway as in India, and there is a great ritual of finger manipulations, signs, and gestures peculiar to this one sect. A very few of these mystic signs are evident to or known by the congregation, as the priests perform them within the folds of their ample sleeves or when facing the altar. A chart of a few of the simpler Shingon gestures was published some years ago by the Musée Guimet, in Paris.

THE GOLDEN HALL

The Kondo, or Golden Hall, of Koyasan is one of the most splendid temple buildings in Japan, vast in outline and richly decorated in its interior. The inner or truly Golden Hall, a pillared space surrounded by broad, matted halls for the congregation on three sides, is one blaze of gold and brilliant decoration, from the floor to the gorgeously paneled ceiling. The elaborately gilded altar stands with its ornaments against the golden wall, and under the great jeweled baldachin the square altar tables are loaded with the innumerable golden objects used in

Main Avenue in the Cemetery, Koyasan

Another View of the Main Avenue of the Cemetery, Koyasan

Danjiro's Tomb

Danjiro was the most famous actor of recent times

Image of Kwannon, the Goddess of Mercy, in the Sacred Grove, Koyasan

Tombs of a Daimio

The Traitor's Grove (see page 664)

Shingon services. The precious old altar pictures were saved from the flames and hang again in exactly their same places, and the spaces above the beams and in between the massive keyaki columns are filled with panels of open-work carving, richly gilded and colored, all glowing in the soft splendor of this golden gloom. It is cold and damp, however, in this jeweled interior, where few sunbeams ever strike beneath the low eaves or through the high wall of koyamaki trees; and on chilly mornings there is a deathly, marrow-piercing chill from the cold, wet matting that explains the hacking coughs and feeble steps of the wan and bleached ascetics who spend hours of meditation and services each day in such places.

THE CEMETERY

The feature of Koyasan in all the centuries, however, has been the cemetery—a great company of gravestones crowding close along either side of the main avenue for more than two miles. In stone-fenced and torii-guarded enclosures are clustered the granite monuments of emperors and shoguns, of saints and princes, priests and laymen. The names of great generals, great traitors, patriots, poets, and actors, of the old daimios and the new nobility and the captains of industry occur side by side.

No horse, nor wheel, nor kago may desecrate this noble forest temple of the dead, and one must walk the sacred ground from the first entrance bridge to Kobo Daishi's tomb. The Hall of 1,000 Amidas breaks the journey—a low, dark temple hall, where the gilded company of images disappear in the dim shadows and gloomy perspective. Near it is enshrined the most venerated image of Kobo Daishi, carved by himself, and time-darkened paintings of the Buddhist celestial worlds from his inspired brush. A row of "wet gods" are ranged near a temple of Dai Kokuya, well modeled bronze images of Jozo, Fudo, and Dainichi seated on stone pedestals before a water trough. The pilgrim clasps his hands in prayer and tosses a dipper of water full in the face of the image; another prayer and another dash of cold water succeed, until the bronzes are wet and glistening and the believing one departs, assured that his prayer for the good of the souls of his ancestors will be heard.

The supreme test for all is to pass over the Bridge of Morals. Unless one is possessed of a pure and clean heart and can meet Kobo Daishi's strict requirements, he may not cross that bridge whose thirty-seven planks are marked with the names of that many Buddhas. It is related that when the Taiko, the great Hideyoshi, first came in worshipful pilgrimage to Kobo Daishi's tomb he had such misgivings and heart-sinkings as to his moral acceptability that he stole away with the high priests at night and tested the ordeal of the bridge secretly, that he might be spared any disgrace in the presence of his suite.

THE HALL OF 1,000 LAMPS

The Hall of 1,000 Lamps fittingly leads one nearer to the saint's tomb, for since the Emperor Toba (1108) made a great service with 10,000 lamps in honor of Kobo Daishi in this chapel erected by the great abbot's nephew, a lamp has been considered most suitable and acceptable offering to a Shingon temple. Here they hang and stand by hundreds and tens of hundreds, ranged on stone tables and hanging overhead far back into the dim distance of the darkened interior. Eight thousand lamps are in there now, 150 burning each day, even through the deserted winter months, when snow lies deep on all the forest paths and the priests must melt the sacred oil that feeds the flames. On special days in each month 1,500 lamps combine their glow-worm flames and fill the hall of shining brasses with a rich glow; and on the death anniversary in April the whole 8,000 unite in gleams of praise to the sleeping abbot. If one light a lamp in honor of Kobo Daishi he is saved from being driven to the dark river of hell and is carried on to the Pure Land with the saint himself. Emperors and shoguns have lighted

lamps past counting, but more acceptable are the lamps of the poor, one that perpetually burns being the little brass lamp of a widow. The big globe of an incense-burner at the doorway sends its incense clouds through openings cut in the shape of Sanskrit letters, and the paths around this temple and the tomb are traced on the lines of Sanskrit letters, and while treading the holy words of prayer one should also repeat them.

The Octagonal Hall of Bones flanks the tomb of the great saint, a deep pit or ossuary, into which are cast the bits of mortality from all over Japan, such ashes and bones assuredly to be carried with Kobo Daishi into the Pure Land. A lichen-covered stone fence surrounds the vault where the lord abbot sits in his trance awaiting Maitreya, the future Buddha, the Messiah, with whom he is to have a final argument on matters of doctrine before entering Nirvanà. Seventy-seven years after Kobo Daishi's death, the Emperor sent new robes for the sleeping saint, and after long preparation the abbot of Koyasan entered the tomb and found the entranced one sitting with long, matted hair and beard and tattered clothing. The abbot shaved and dressed the sleeping one reverently, but the priests who were with him saw nothing at all, as their superior made motions in the air as if dressing and shaving some one. Not until they had sunk themselves in deeper absorption, after more intense prayer, were they able to feel the lines of the cold body as the abbot guided their fingers. Their eyes were then dimmed with tears and with the celestial radiance that flooded the vaulted tomb. A great stone was laid over the entrance and the place closed for all time, the abbot fearing the result, if for some want of merit his successors should not be able to discern the saintly person. Emperors and princes continued to send offerings of clothing each year, and the abbot still goes in state procession and lays them on the altar table in the Hall of Lanterns on the anniversary day. Then Kobo Daishi miraculously assumes new garments as he needs them, without mortal aid, and one may see the rolls of silk and imperial offerings, by the altar table in the little temple, awaiting this last incarnation of one of Sakya's disciples.

SPLENDID MONUMENTS AND TABLETS

The stone monuments of the early emperors stand on mounds of earth, the simplest memorials there, while the Shogun Iyemitsu has the most splendid monument on the mountain. The poets and painters of the great ages are all in evidence, and the Lord of the Forty-seven Ronins and the patriotic Ii-Kamon-no-Kami, who opened his country by the treaty with Commodore Perry and lost his life in expiation of the deed, are also there, and great Saigo, with his heroes of the rebellion of 1877, are there too. All the old feudal princes have their sotoba tombstones of Bizen granite, accompanied by stone lanterns that are lighted on memorial and festival days. The daimios of Suruga and Aki have the largest monuments, but the memorials of the princes of Sendai, Satsuma, and Kaga are also noteworthy. The houses of Date of Sendai and Nabeshima of Hizen have small memorial temples in the village near the entrance of the cemetery, with priests' dwelling-houses attached, where the members of those families stop when they come for interments and anniversary celebrations, where the tablets are kept and tended. The grave of the traitor Akechi Mitsuhide, a great granite sotoba split by lightning from the onion cap to the great heavy plinth and held in place by wooden braces, is a most eloquent witness of the wrath of the gods and of Kobo Daishi that he should venture there, and arrests the Japanese visitors more than any other monument.

Danjiro, the great actor of the Meiji time, has his granite tombstone, with his well-known crest of three linked rings, on the main avenue, and in this commercial, material age, *Kabushiki* (the joint stock company, limited) has even reached Koyasan. Clubs of merchant folks and working people combine in life to erect an elaborate monument, a splendid bronze Jizo or Kwannon on a

granite base, on which their names are inscribed.

The Russian War brought pilgrims and visitors to Koyasan in great numbers, and the tablets mounted to unusual thousands in the first year. Regimental groups united in sending tablets to Koyasan, and it must have comforted many, who died in agony on the field, to know that in death their spirits would be free to seek the cool green forest aisles and the golden temple rooms on Koyasan; to rest there with saints, priests, and princes; to be tended and remembered each night and earliest morning; to have reverend priests interceding for them in deep-voiced chants amid clouds of incense as dense as battle smoke and Manchurian dust.

RECEPTION BY THE LORD ABBOT

One morning the feeble old Lord Abbot received us in his Golden Audience Hall in the Kongobuji, and his was an ideal presence. He was of such venerable and saintly mien that it was not all etiquette that made us slip from the foreign chairs to our knees and prostrate our foreheads to the mats in the presence of that noble prelate in his splendid ceremonial robes. The delicate face, blanched with illness, refined by suffering and the religious life, the splendid purple garments and small red brocade kesa, like the begging sack of earlier priests, made a picture in that room paneled with severely plain gold screens. The ceremonial cakes and tea were brought, the venerable abbot made the sign of serving us, and a young priest put nearer to us the lacquer trays, with their exquisite arrangement of impressionist shells, sea waves, octopus, and red tai fish. The abbot told us of the 50 years of his life spent on high Koyasan; how he came as an acolyte at seventeen years of age, and for sixteen years past had been the Lord Abbot, the successor of Kobo Daishi. A few more minutes seemed to exhaust his strength, for he had been carried in from a sick bed to do honors to the friends of a court official and of a brother priest. Two priests lifted the invalid to his feet and assisted him out through the golden fusuma, and we knew that we had been in the presence of a living god.

HONORING THE DEAD SOLDIERS

All the Kongobuji and its treasures were thrown wide to us, and we were conducted past gold screens on which Sesshiu and the greatest of the Kanos had drawn their brushes, to a corner apartment, the room where Hidetsugu committed hara-kiri and where a Kakemono by Sesshu was temporarily hung across four gold fusuma panels painted with white herons on snow-laden willow-trees by Kano Motonobu. After that artistic climax, that Pelion of Sesshiu heaped on the Ossa of Kano, words failed, and we went on in dreams to see bamboos in the snow, as painted on long series of screen panels by Motonobu, and blossoming plum trees by Tanyu. After that came the inner sanctuary and chapel of the monastery—the imperial chapel, as it were—where the ihai of the last Emperor and Empress and of members of the imperial family are ranged at either side of the reliquary containing the tablet of Kobo Daishi. A plain white pine board erected in the midst of this golden splendor amidst the ranks of gilded lacquer tablets, is inscribed in black "to the souls of those who died in the war of 1894-95;" and to the common people it is inexpressibly comforting to see the tablet of the soldiers enthroned with the ihai of the imperial ancestors, worshiped and tended as they are tended for all time. During the Russian war a most conspicuous object on the altar of the Golden Hall was another plain pine tablet inscribed "to those who are dying daily in Manchuria," and the same tablet was set up in nearly every Buddhist temple in Japan, which also celebrated monthly *Segaki* services, or "feasts of hungry souls," while the war endured. The head priest of our monastery at Koyasan showed a book, into which he had pasted all the official lists of the dead soldiers and sailors, and holding this

book under his hand during the daily services, he prayed for all the hero souls. In the same way, each monastery has tablets to the souls of the dead poor—of those who die too poor to have their names put on an ihai for home altar or temple, or without descendants or relatives to revere their memories. When the head priest read the tale of heroism and loyality of the men on the *Kinshu Maru,* sunk off the Korean coast early in the war, he made an ihai himself and placed it near the altar. Many other priests and laymen throughout Japan did the same thing, as the honorable death of the Nara soldiers who went down with the little transport is one of the finest instances of the samurai spirit, of pure Bushido, a heritage to the people for all time.

We spent that rainy afternoon on the steps of the treasury of the Golden Hall. The treasurer, two priests, and a lay brother brought from their boxes and wrappings the most sacred objects and relics which Koyasan possesses. We touched the ponderous gold maces which Kobo Daishi himself had used, the bells which he brought from China, the golden images, the *sharidens,* or reliquaries, which he kept in his own little oratory, and his original Chinese rosary of black wooden beads in a crumbling box of old Kambara lacquer.

At the end of two rainy hours' session with the treasures, the arrogant lord treasurer had worn off his grand manner, was frankly and charmingly sociable, and in an excess of good feeling carried us off to his own dwelling, an ancient brown-eaved wing of a monastery, in a region of weed-grown foundations where great buildings had been. The rooms were simple, the screens and fusuma severely plain, but when the shoji were slipped aside they disclosed one of the most beautiful of the thousand and one famous monastery gardens on Mount Koya.

On the 21st day of each month, known as Kobo Daishi's Day in all the temples of his sect, there are special services in the Golden Hall, when the ten high priests from the ten monasteries of Koyasan, with their suites, assemble for an early morning service. In the golden gloaming the ranks of brocaded priests, the splendid chanting, the silver strokes of the altar gongs, and the curling incense make a powerful and affecting appeal to the religious emotions.

The high priest of our monastery came each evening for a ceremonial call, bringing now one treasure from his storeroom and then another. Once it was the Taiko's account book, detailing the expenses connected with the erection of the great Dai Butsu at Nara; and at another time the journal of the Lord Abbot, describing the events during the time when Nobunaga, having suppressed and destroyed the Tendai monasteries on Mount Hiyeizan, turned to Koyasan as another priestly stronghold needing annihilation. Finding the abbot and his council to be foes of another mettle, when once disturbed from contemplation of the abstract, he called off the forces of war and the Shingon priests were left in peace.

One sunny afternoon the priestly host took us to neighboring monasteries on a quest for gold screens and picturesque fireplaces. The box fireplace in the middle of the room, with a square chimney continuing like a massive column to the roof, is the invention, it is claimed, of Kobo Daishi himself, and the little gabled roofs protecting these chimneys project from nearly every roof on Koyasan. Even in April and September, the nights on the mountain top are sharp and frosty, and the vast sunless caverns of stone-floored kitchens open to the rafters of the lofty roofs, are like ice caves, save for the comforting atmosphere around the columnar fireplace, where the kettle hangs simmering from the crane and the embers glow. The same fireplace is found in the Lord Abbot's reception-room, and in the halls where the young monks gather to read their devotional books.

Around the corner from the Taiko's bell tower, where the bronze statue of Kwannon looks serenely across the great

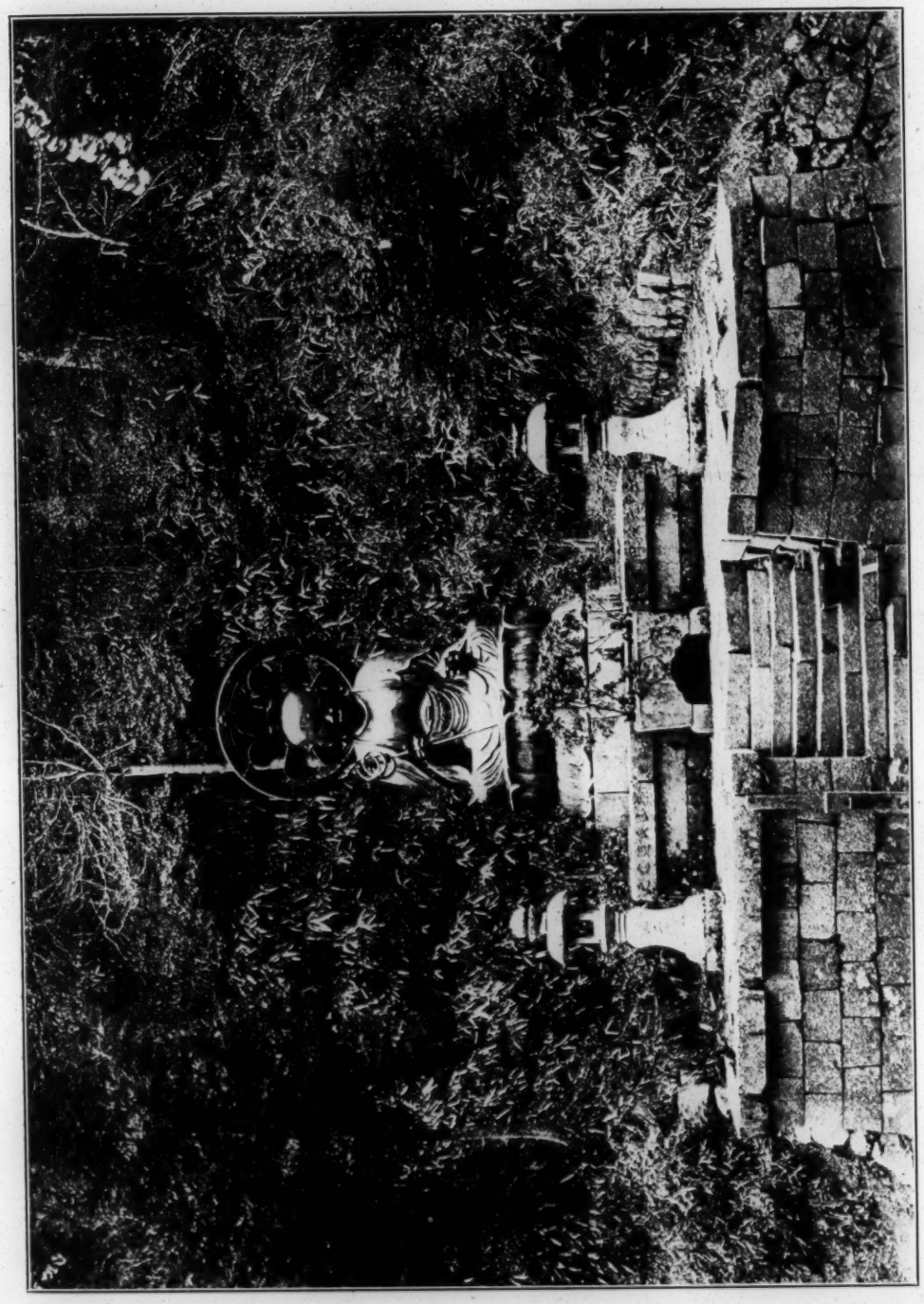


Image of Jizo San at the Entrance of Koyasan

The Head Priest of One of the Monasteries of Koyasan

square before Kongobuji's gateway to the village street, green lanes lead to other lanes, to deserted avenues and aisles in koyamaki groves, where the white walls, black rafters, and black roofs of monastery gates and buildings are continuous. Such a deserted monastery is Muriojo-in, whose painted wooden doors open to corridors, where, in long series of rooms, the most beautiful gold screens slumber in darkness and icy, deserted dampness.

On another afternoon we visited the head priest of the Shojo-shin-in, the second greatest establishment now existing in Koyasan. It has been rebuilt since the fire, which spared only its godown, and the few screens, altar treasures, and tablets that were carried to safety. The hall of tablets is the largest on Koyasan, severely splendid in its black lacquered ceiling and shining dark floor, and the walls are completely hidden by the thousands of ihai rank on rank.

The first reception-rooms blazed with the glow of reflected sunlight on the new gold-leaf screens that are without decorative designs, and treasures incalculable lay all over the floor of one room, where the boxes of precious Kakemono had been brought in, in preparation for an airing. There was a glowing Okyo screen, where the red rising sun rose above tossing waves, and a pair of Tanyu's dragon and tiger screens in sepia on gold that held one reverent. Another pair of Okyo screens were brought forward and opened out in line to show the greatest landscape view of Japan—Fujiyama rising from the plain, with the forked peninsula of Mio-no-Matsubara at its feet, central in a scene of ideal beauty. Gold screens with white herons on snowy pine trees and gold screens with snow-laden bamboo branches excited our strongest raptures; and then we were conducted past princely guest-rooms, up a steep staircase, and up yet another staircase, across a garden, and came out on a large tea-room far up on the steep hillside, the veranda overlooking the monastery roofs, the line of village roofs and commanding green summits beyond—the moon-viewing pavilion of the hierarch.

THE MOST WONDERFUL RELIGIOUS PAINTING IN JAPAN

We waited for the skies to clear before making reverent pilgrimage to Shimbe-sho-in to see that greatest religious painting in Japan—the *Amida Ni-ju-go Bosatsu,* or Buddha and the twenty-five Angels, painted by Eishin Sozu for one of the Hiyeizan temples, and later bought for the Koyasan shrine. Shimbe-sho-in is the remotest and least visited of the monasteries on remote Koyasan. "Koya no Koya," said my priestly guide, who wore a white cotton overcoat to keep the rain drops from his rich silk coat, as he followed the narrow path through the woods, a minion following with the useless red-ribbed umbrella of ceremony under his arm. It hardly seemed possible that a great temple and the supreme shrine of Japanese art could lie beyond the deserted foot path gullied by the rain, where we brushed the undergrowth at every step. The path led up steep slopes and plunged down steep slopes between koya, pine, and hinoki trees, and at last we crossed a tiny foot-bridge of approach, before a massive white Chinese gate, its solid arch topped by an intricately bracketed roof. White-walled buildings, showing rafters and timbers of dark-brown, unpainted wood, surrounded the small court-yard, and we entered the severely plain waiting-rooms—white plastered walls, white paper screens, unpainted wood frames and beams, wholly without decoration or ornament of any kind. The Shimbe-sho-in belongs to the Ritsuo sect, one of the six earlier sects established at Nara in the early centuries of Buddhism (753), when eighty priests came from China to teach the Vinaya doctrines and were settled at the Todaiji by the reigning empress. Meditation and contemplation are great features of their religious observances, but their ritual is less elaborate, and the austere simplicity of their temple and monastery halls is in contrast to the gorgeous splendor of the Shingon establishments in Koya proper.

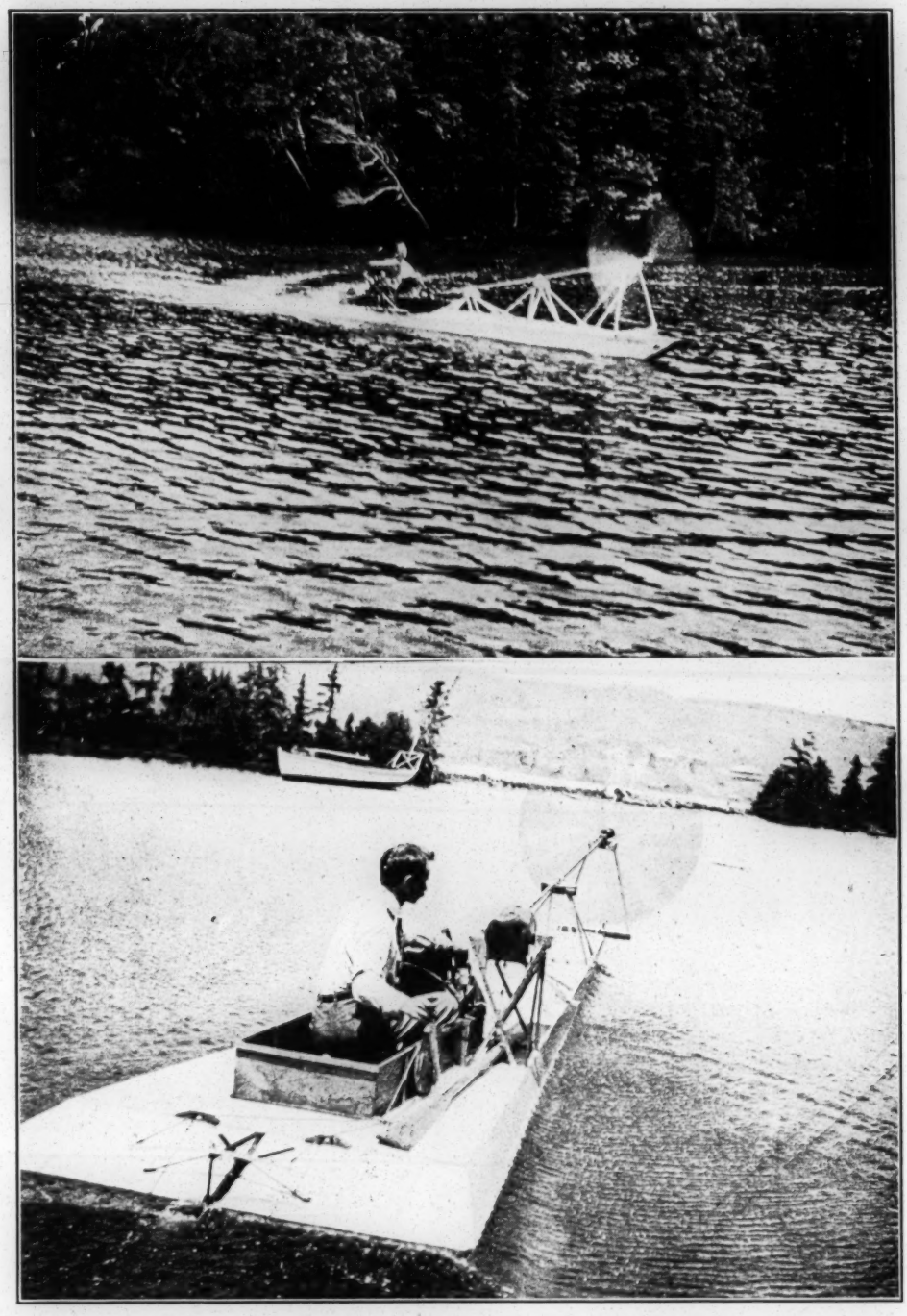
After long waiting, which was supposed to be spent in meditation, that we might approach in a properly reverent frame of mind, we were conducted to the veranda, to again cleanse hands and mouth before the solemn young priest led the way into the temple, where richly carved panels and beams were devoid of gold, or lacquer, or color. Immediately at the front of the great hall, in the full light reflected from the court, hung the three scrolls that combine in the one great painting. Before lifting our eyes to the luminous deity and the angelic host in the golden glory of paradise, we were given a pinch of incense to rub on the hands and a clove to hold in the mouth. Standing with hands clasped in prayer like our priestly leader, we knelt, prostrated our heads to the mats three times, and then were free to sit back on our heels and look at what is certainly one of the world's greatest paintings, the most splendid picture which any Buddhist temple in Japan has ever possessed. This and the Mokkei "Kwannon" of the Daitokuji are admittedly the greatest creations of Buddhist art. It has once been photographed, but in black and white the wear and tear of ages are too conspicuous and disturbing; and once a painted copy was made, but these copies are all difficult to get and unsatisfactory. This incomparable picture makes a fresh and first impression, when one's eye rests upon the golden Godhead, or, Amida—Buddha of all Buddhas, Lord of the Western Paradise—floating in a golden cloudland with a host of angels in brilliant garments sweeping through the flame-like clouds, escorting souls to paradise. The whole is the richest color study, the noblest composition, eloquent of the deepest religious sentiment and the most poetic feeling, and the action, the movement of the angels, and the flame-like clouds are marvelous. We sat rapt before the radiant scrolls, in the damp and lonely hall of the temple, drinking in and trying to memorize this supreme sight of a lifetime, this greatest picture of the middle ages, painted by the priestly Eishin, or Genshin, one of the founders of the Jodo sect, the Fra Angelico of Japan.

The solemn young priest broke the spell by a slight sound in his throat, when he thought our trance had lasted long enough. We offered incense, laid our thank-offering of money folded in soft white paper on the low stand, and reverently withdrew.

We went back to our monastery of Eternal Felicity and followed the broad avenue to the Dai Mon, the great south gate of the Koyasan enclosure. Pilgrims from Wakayama still arrive by that path, but the massive gateway has a sadly deserted air, its niches are empty, and it is blocked by the huge timbers that are being assembled for rebuilding the great pagoda. The view from this gateway is one of the renowned landscapes of Japan, and not the humblest pilgrim passes on without stopping on the plateau terrace outside the Dai Mon to look out over the descending woody foreground to the narrow valley cutting southward, and on across over all of Kiishiu province and the Kii Channel to the long point of Awaji Island cutting the Inland Sea, with the blue crests of the Sanuki Mountains on the horizon.

"I have never been to Koyasan," innumerable Japanese have said to me, "but of course I shall go there finally—when I am dead. We all do—we must."

"And I went there in 1868," said the Grand Master of Ceremonies at the Imperial Court. "I led 2,000 men from Kyoto around through Yamato to Koyasan, to come down upon the Shogun's forces at Osaka from the rear. I would like to see my samurai now, as they marched through the cemetery. We all wore armor and helmets and long swords. We were a picturesque company of fighting men then. It is not the same now, when war is all machinery. But Koyasan is at least unchanged. It never can change, nor our souls change. It is Yamato Daimashi, the Soul of Japan. We all go there. They cannot disestablish nor purify the dead."



Photos by Gilbert H. Grosvenor

Pictures of the "B B"

An experimental boat of Dr Alexander Graham Bell, driven by aërial propellers. The boat carries a 20-horse-power motor, weighing about 115 pounds. The motor was built by G. H. Curtiss, of Hammondsport, N. Y. The boat, which has attained a speed of nearly 10 miles an hour in smooth water, is used by Dr Bell to test the efficiency of aerial propellers of different designs. In the pictures it is being guided by Mr Curtiss.

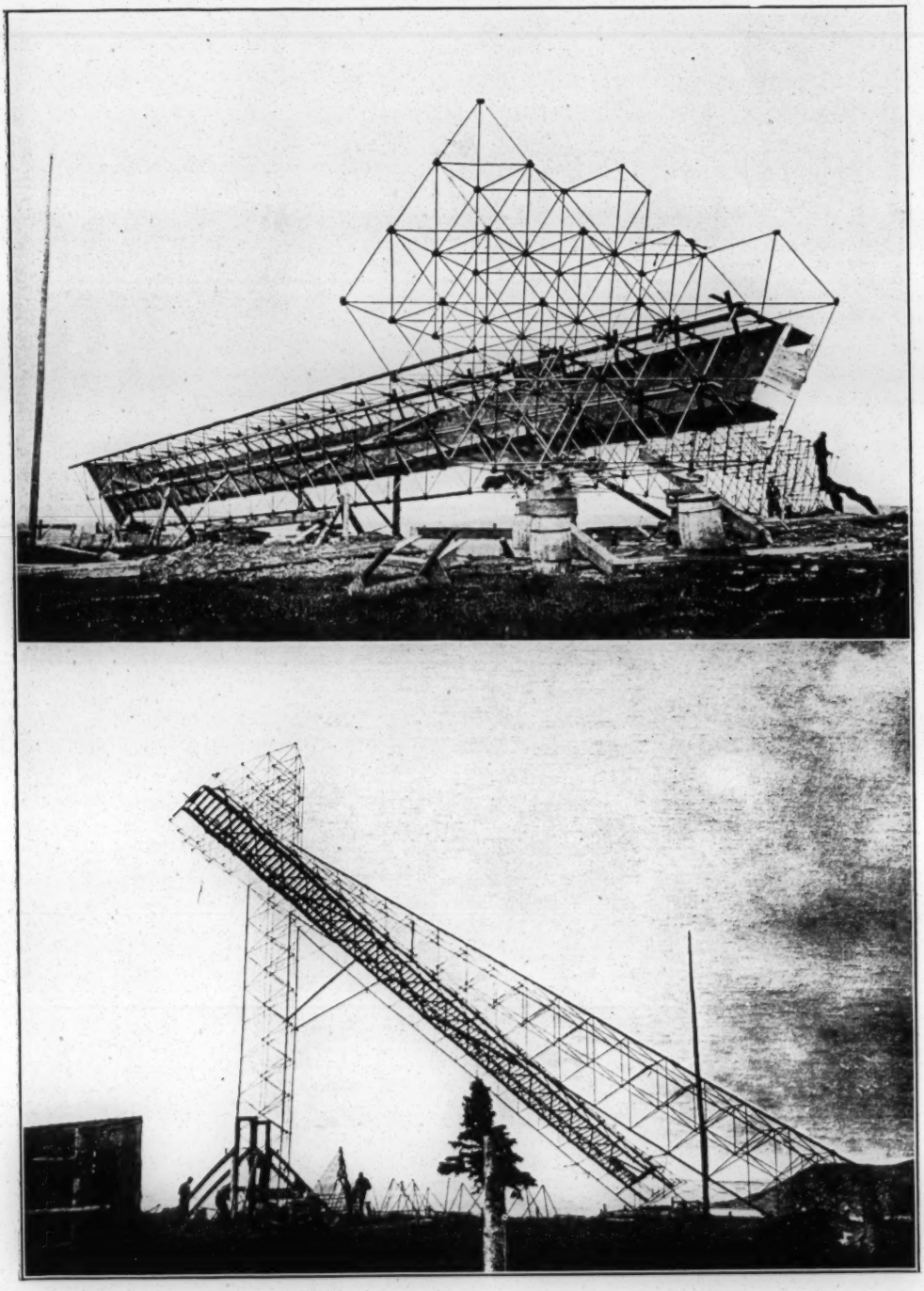
DR BELL'S TETRAHEDRAL TOWER

AN outlook tower, unique in design and construction, has been recently erected by Dr Alexander Graham Bell at his summer home in Baddeck, Nova Scotia. The tower reaches a height of nearly 80 feet, and yet neither scaffolding nor derricks were employed in building it. It is made of the tetrahedral cells invented by Dr Bell and described by him in the article on "Aërial Locomotion," published in the January, 1907, number of this Magazine. The accompanying illustrations represent the process of construction. Picture 1 shows several piles of tetrahedral cells made of ordinary galvanized iron piping. These cells were riveted together until two legs of the tower were completed and joined at the upper end, as in picture 2. The third leg was then shoved up by jack screws, successive layers of cells being constantly added, as in picture 3. The completed tower appears in pictures 4 and 5.

This considerable structure weighs less than 5 tons, and yet can carry a great weight. It is remarkable, not only for its strength and lightness, as well as cheapness, but also for the fact that it was put together in about 10 days by several unskilled laborers, and that every part of the work was done on the ground. No one was obliged to leave the ground until the tower stood erect and completed. Mr C. Baldwin, C. E., of Toronto, superintended the construction of the tower.

Photo by Douglas McCurdy

1. The Tetrahedral Cells, of which the Lookout Tower was Constructed



Photos by Douglas McCurdy

2 and 3. Illustrations of the Tower during Construction

Showing how it was put together on the ground, and raised without scaffolding or derrick

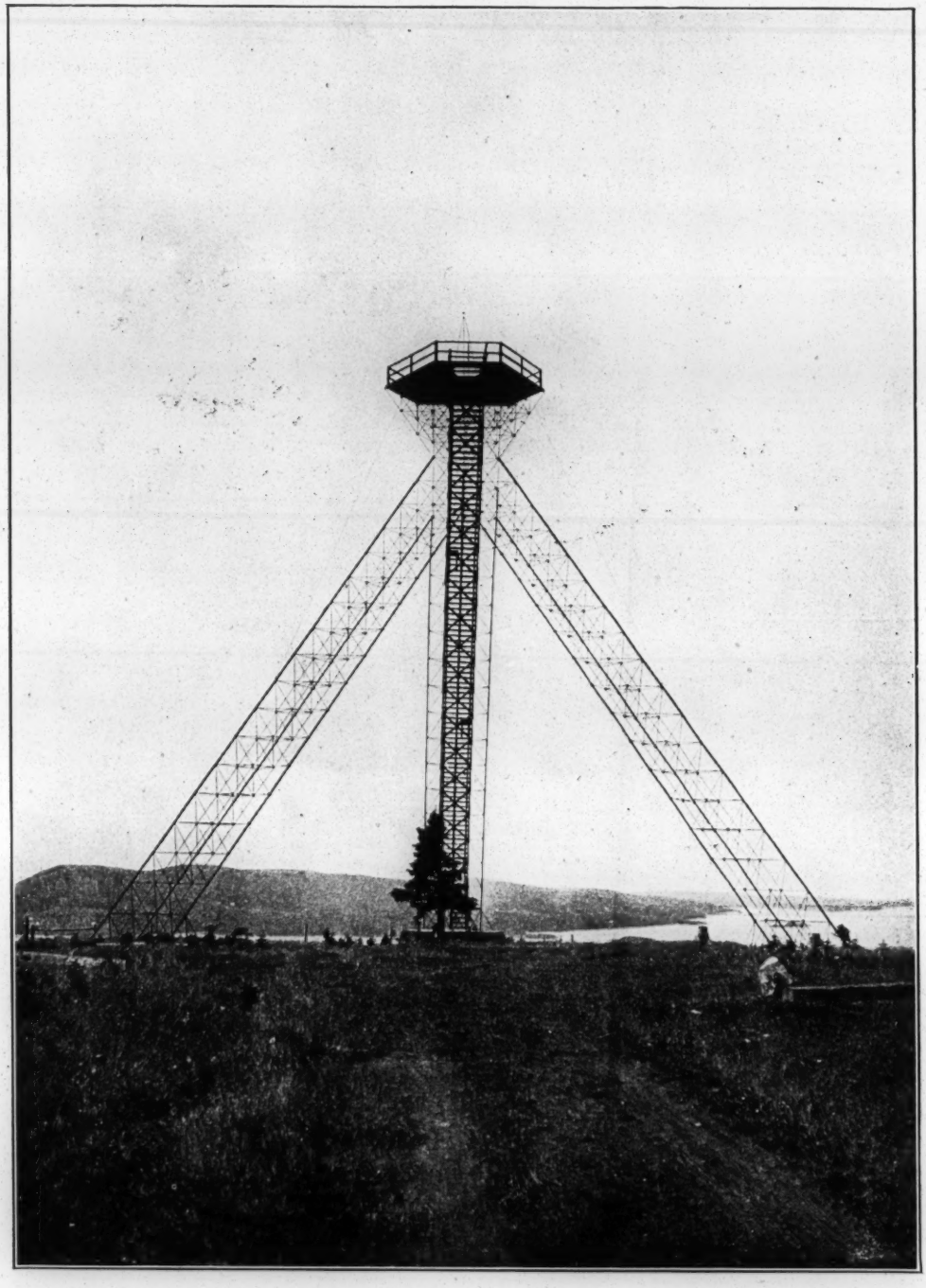


Photo by Douglas McCurdy

4. Tower of Dr Alexander Graham Bell, Built of Tetrahedral Cells

The tower is 75 feet in height, and weighs less than 5 tons

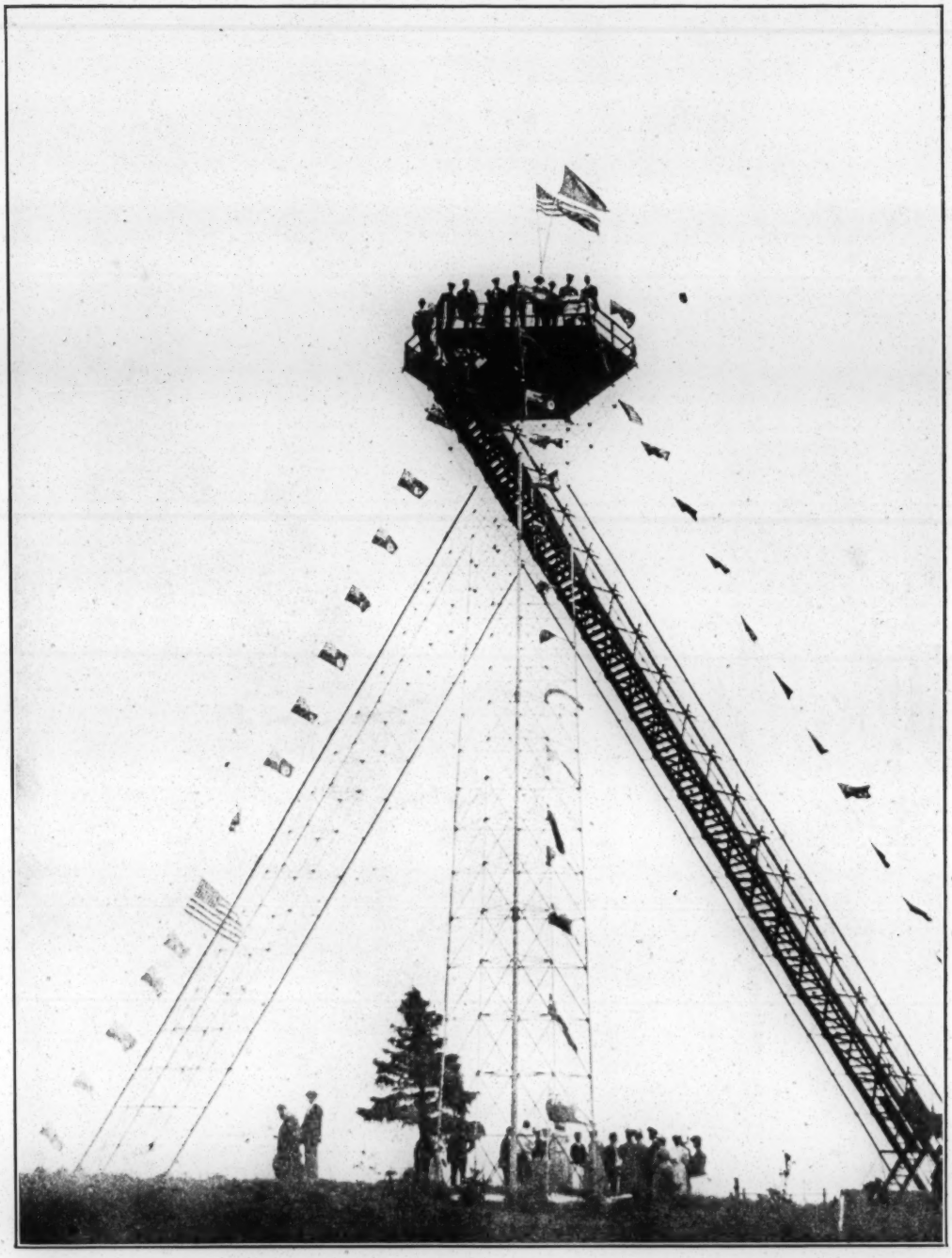
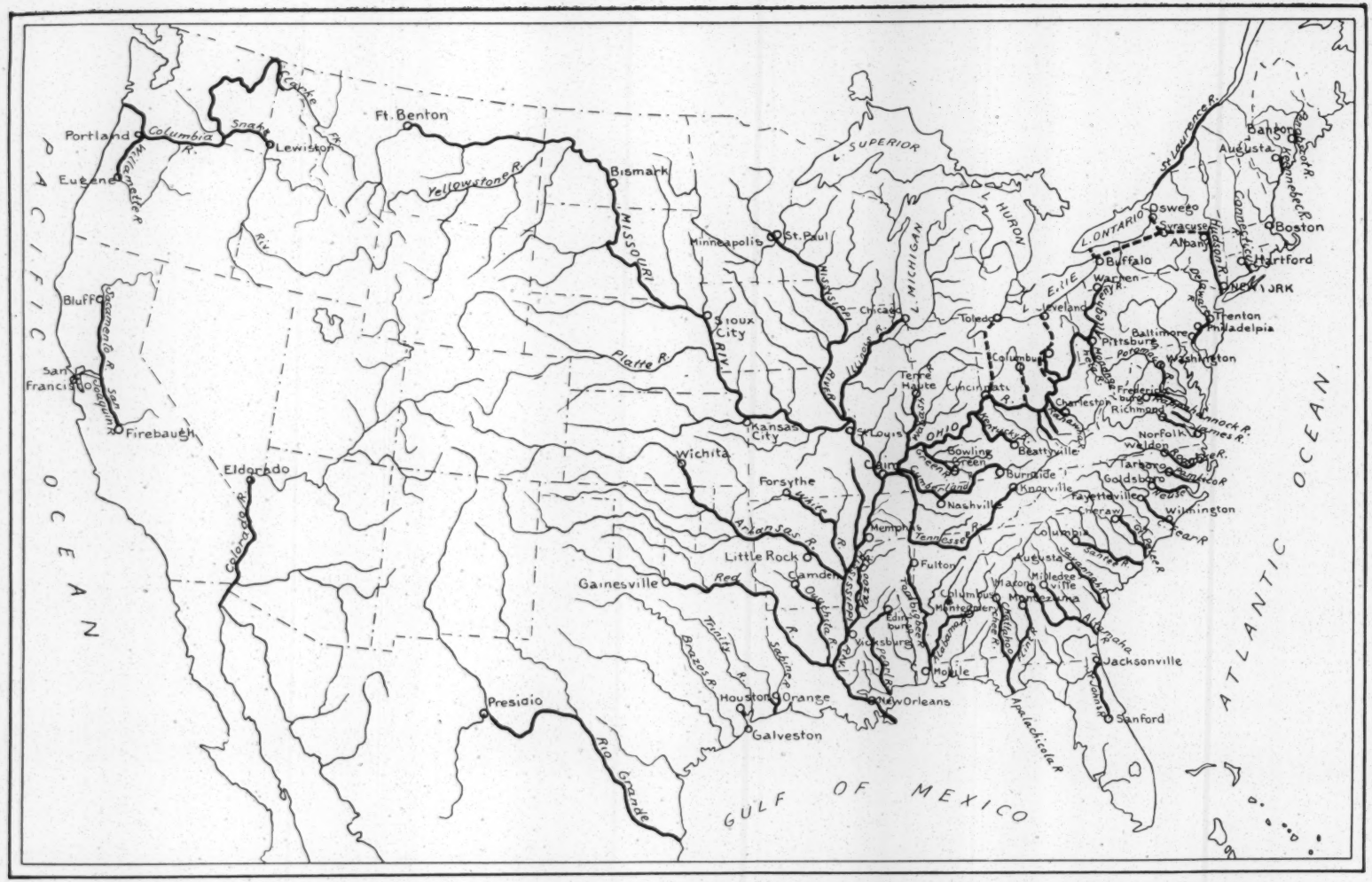


Photo by Douglas McCurdy

5. Another View of Dr Bell's Tower Taken on the Opening, August 31, 1907

The stairway is placed inside one of the legs

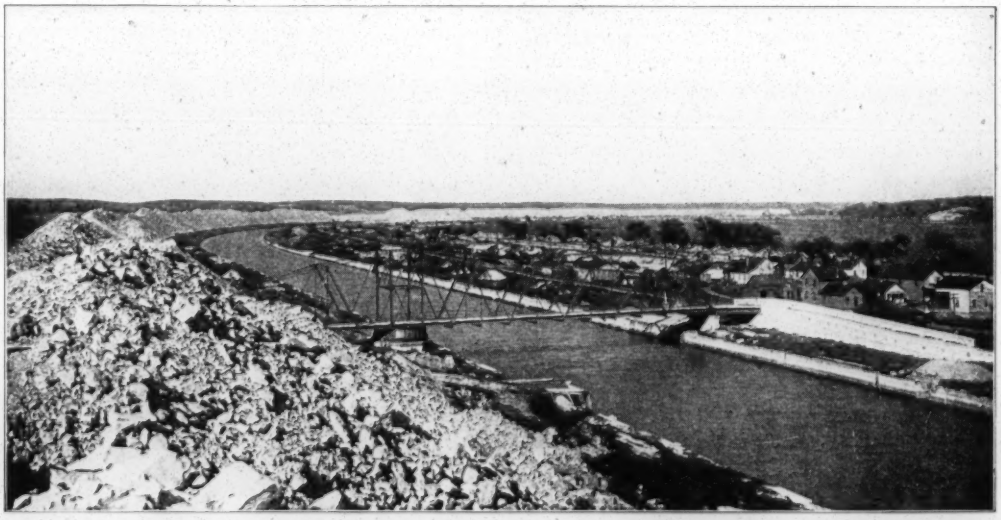


Outline Map of the United States, showing Waterways that Probably Could be Made Navigable for Commerce

While no survey and estimate of the cost of such a system has been made, there is good reason to believe, from the experience of Europe, that these rivers could be made navigable for about one-fifth what it would cost to build railroads affording equal accommodations for traffic

A View of the Chicago Drainage Canal

This canal has been built by the city of Chicago at an expense of over $50,000,000. It extends from the mouth of Chicago River to within sight of Joliet Lake, below Lockport. It can be navigated the entire distance of 36 miles by ships drawing 20 feet. The city has offered to contribute this magnificent waterway to the Gulf-to-Chicago deep-water route, provided the government will make a 14-foot channel in the Illinois River to Saint Louis. Army engineers have reported that such a channel could be constructed for $31,000,000, but Congress, before making this appropriation, has instructed the Mississippi River Commission to make a survey and estimate of cost for continuing the channel from Saint Louis to the Gulf. This picture shows a section of the Chicago Drainage Canal cut through solid rock. The stone is now being sold at a good price by the city.



Photos from *The World Today*

The Chicago Drainage Canal at Romeo, Showing the Great Two-mile Curve

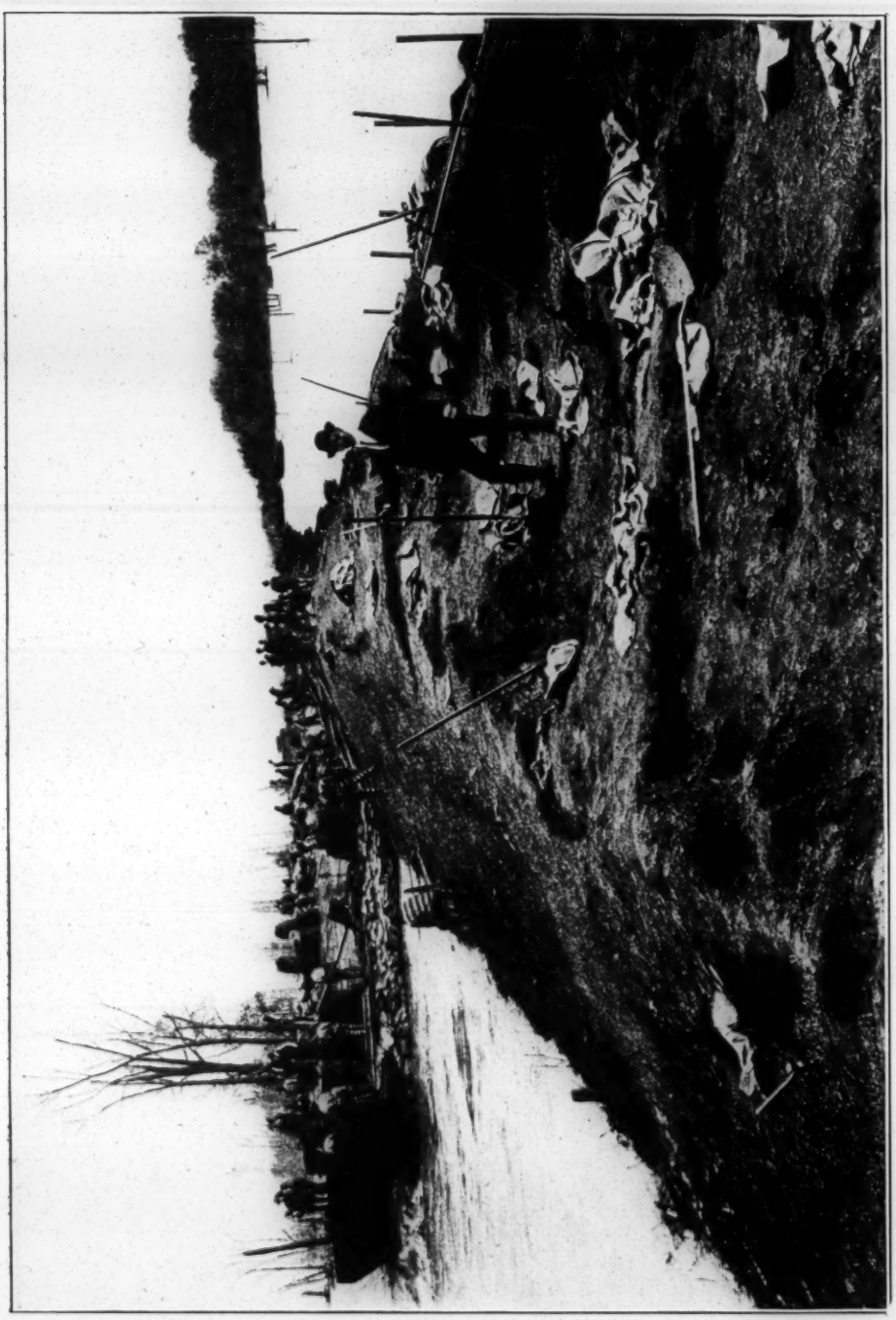


Photo from Dr H. C. Frankenfield, U. S. Weather Bureau

Repairing a Levee at Lagrange, Mississippi

THE DEEP-WATER ROUTE FROM CHICAGO TO THE GULF

THE energetic demands of the Mississippi Valley for a deep-water route from the Great Lakes to the Gulf are not fully appreciated by other sections of the country. The hundred and more millions of dollars that may be required to construct and maintain a 14-foot channel from the Gulf to Chicago, up a river famous for its floods and shifting mud banks, make the plan seem extravagant and visionary to those not acquainted with the situation. But that the Middle West is in earnest is shown by the fact that the people of Chicago are willing to contribute to the water route a canal on which they have expended over $50,000,000. The national government has been very successful in its work in "reclaiming the West" by irrigation, in "saving the forests" by forest reserves and a capable forest service, in promoting our fisheries by distributing billions of eggs and fish annually, and it is now asserted, inasmuch as our inland commerce has far outstripped the railways, that the government should make our rivers useful.

Nature has favored no portion of the world with such a magnificent system of waterways as it has bestowed on the Mississippi Valley. The Mississippi and its great feeders, the Arkansas, the Missouri, the Illinois, the Ohio, the Tennessee, etc., offer nearly 15,000 miles of splendid river highways, but as yet commerce has made comparatively little use of them.

THE GARDEN SPOT OF THE AMERICAN CONTINENT

Twenty-two states are included in the Mississippi basin. They comprise 40 per cent of the total area of our country, and produce 75 per cent of all our exports. They furnish the great bulk of our agricultural products, about two-thirds of our manufacturing industries, and about $10,000,000,000 worth of finished products each year.

"The Mississippi River, with its tributaries, from its headwaters to the Gulf, embraces within its territory a constellation of states which, for wealth, mineral resources, agricultural products, soil, and climate, is not excelled by any other like group of states within our domain. The Mississippi Valley can, under proper conditions and culture, furnish the grain, the meats, and the fruits for the average consumption of the people of the civilized world. Her resources in minerals are but slightly developed, and, so far as known, are practically inexhaustible. Her people are healthy, educated, robust, energetic, and capable of accomplishing anything to which they may turn their hand or direct the energy of their body or brain."

Until recent years railways had been built fast enough to take care of the tremendous traffic in this region, but the extraordinary development of the past ten years, the growth of business between the North and South, and the increasing tendency of much of our commerce to seek an outlet from the Gulf, instead of on the Atlantic, has brought about an unsatisfactory situation. The railways cannot carry quickly and satisfactorily all the freight offered. More additional railway mileage is required than can be built, and the railways which have usually opposed the development of our waterways are now among the most earnest advocates of river improvements.

Parts of a statement on this subject by Mr James J. Hill, read in the House of Representatives during the last session, are given below.

"The business of the United States is today so congested that from every portion of the country arises clamor for relief. The railroads everywhere are taxed beyond their power. The people

of the United States, therefore, are face to face with the greatest business problem that has ever threatened the nation.

The following figures, compiled from the official reports of the Interstate Commerce Commission, and covering the growth of the railroad business for the last ten years, exhibit the significant facts:

	1895	1905	Increase per cent
Total single-track mileage	180,657	218,101	21
Locomotives	35,699	48,357	35
Passenger cars	33,112	40,713	23
Freight cars	1,196,119	1,731,409	45
Passenger mileage	12,188,446,271	23,800,149,436	95
Freight ton mileage	85,227,515,891	186,463,109 510	118

Within the last ten years the volume of railroad business in this country has increased over 110 per cent. Meanwhile the railroads have endeavored to meet it; while the increase in locomotives has been 35 per cent in number, and in freight cars of all classes 45 per cent, the substitution of larger cars for smaller, better methods of loading, and increase in weight of locomotives have greatly added to the carrying capacity of the railroads so far as rolling stock is concerned. There are and will be cars enough to carry the country's traffic if the cars can be moved, but engines and cars must have tracks upon which they may run.

A striking tale is told by the statistics of railroad building in the United States. Not only is it true, as stated above, that there has been in the ten years ending in 1904 an increase of but 21 per cent in mileage, but the most impressive fact is that railroad building has, within a generation, fallen off just as the demand upon trackage has increased. At this moment, when that demand is greatest and the whole country is clamoring for relief, it is the smallest in years. These are the figures:

	Total mileage	Increase		Increase per annum
		Amount	Per cent	per cent
1870	52,398	.....	.....	.....
1880	93,671	40,773	77	7.7
1900	163,597	69,926	74.6	7.46
1904	213.904	50,307	30 75	2.19
1906 (estimated)	220,000	6,250	2.9	1.45

The disparity between the growth of traffic and the additions to railroad mileage and the extension of terminals, shown by new mileage of less than 1½ per cent a year since 1904, to take care of a traffic increase averaging 11 per cent a year for ten years past, presents and explains the real problem.

The best judgment of many conservative railroad men in the country is that an immediate addition of not less than 5 per cent per annum to the railroad trackage of the country for say five years should be made to relieve the situation, and put an end to unreasonable delay in the transaction of business.

In order to handle the enormous addition of 110 per cent in business with only 21 per cent more track the railroads have utilized, as never before, the carrying capacity of each mile. Not only were there 35 per cent more locomotives and 45 per cent more cars in service in 1905 than in 1895, but each engine and car did much more work. The passenger miles traveled per locomotive increased from 1,218,967 to 2,043,553, or more than 68 per cent, the ton miles per freight locomotive from 4,258,821 to 6,690,700, or more than 57 per cent. Trains run faster, cars are larger, locomotives are more powerful, and methods of handling the business have so improved as to increase the general efficiency. Only by these improvements has the disparity between trackage and business done been prevented thus far from creating widespread suffering and loss.

No addition to equipment and no increased efficiency in operation can take the place of the imperatively required

new trackage and terminal facilities. Suppose that only 25 per cent additional tracks, with necessary terminals and equipment, is to be built during the next five years, for with less the country cannot conduct properly the volume of business even now in sight. Our total railroad mileage is about 220,000 miles. A 25 per cent increase would mean the building of 55,000 miles of new track, much of which would be additional tracks to existing lines; and if five years were allowed for the work, it would be necessary to build 11,000 miles each year. But that is not all. One-third would have to be added to this amount for terminal and passing tracks. Add 33 per cent to 55,000 miles, and the total is 73,333 miles; or, in round numbers, 75,000 miles of track as the requirement for the country to meet immediate needs. As most of these additional tracks would be built where traffic is heaviest, for double-tracking existing lines, it must be expensive work. Grades should be lowered, curvature reduced, and highway and the other bridges built and expensive terminals created.

No practical man would accept a contract for furnishing the facilities required, including additional equipments and terminal facilities, for less than $75,000 per mile. The question of terminals alone is most prohibitive. Terminals now in use were acquired when property was cheap, and can be enlarged only by heavy outlay. In many cities it is not even a question of cost, since the area necessary to handle railroad business properly is not to be had at any price, and does not exist within the business section where terminals must be located, unless the business itself were destroyed to make room. The new work, then, would amount to $5,500,000,000 in round numbers, or a yearly average of $1,100,000,000. This is the sum which should be spent before the commerce of the country can be moved properly. It is just twice the total amount of the bonded debt of the United States after the close of the civil war. It is more than twice the entire currency in circulation in the country, and only a little less than twice the deposits in all the savings banks in the United States put together.

A fifteen-foot canal or channel from Saint Louis to New Orleans would go further to relieve the entire Middle West and Southwest than any other work that could be undertaken. With such a depth of water a single powerful towboat would carry from thirty to forty train-loads.

POTENTIAL GREAT RIVER HIGHWAYS OF AMERICA *

This idea of connecting the Lakes with the Mississippi River and the Gulf is one of the greatest and widest conceptions of the age, fully as important, in my judgment, to the American people as the Panama Canal itself, and I earnestly hope that the Commission of Engineers created by this bill to survey that part of the route south of Saint Louis will encounter no insurmountable difficulties.

If Mr Hill is right, and deep rivers are needed to relieve freight congestion, why not improve the great Missouri River, which the engineers tell us is navigable up to Fort Benton, Montana, 2,285 miles from its mouth, thereby relieving the appalling congestion in North Dakota and Montana which now exists, and carrying invaluable benefits to all the citizens of its imperial valley? Why not give the Upper Mississippi at least six feet of water up to Mr Hill's home in Saint Paul? If Mr Hill is right about the Lower Mississippi, would not the situation be relieved by improving the Ohio River to a depth of nine feet from Pittsburg to Cairo—a distance of 1,000 miles to the greatest freight-producing section of the Union and the most populous and prosperous river valley on our continent? Why would not the congestion in Tennessee and northern Alabama be relieved by improving the Cumberland and Tennessee Rivers, which are splendid streams, susceptible to first-class naviga-

* Speech by Hon. Joseph E. Ransdell, of Louisiana, in the House of Representatives, January 31, 1907.

tion for many hundreds of miles? Why would it not relieve the congestion in the new state of Oklahoma, in Arkansas, in northern Texas, and Louisiana if we properly improved the Arkansas, the Red, and the Ouachita rivers? Why not help the people of Mississippi by improving the Yazoo and the Big Sunflower; those of Alabama and Georgia by deepening the Black Warrior and the Chattahoochee; those of Texas by canalizing the Brazos and the Trinity; those in eastern Georgia and South Carolina by improvement on the Savannah and the Santee; those in North Carolina and Virginia by proper expenditures on the Cape Fear, the James, and the canal from Norfolk to Beaufort; those in Pennsylvania and New Jersey by improving the Allegheny, the Youghiogheny, the Delaware, and the Passaic; those in New York and the Eastern States by coöperating with the Empire State to make its great Erie Canal of the greatest utility, and by canalizing the Connecticut River?

Why not improve the mighty Columbia River of the West and give to the people of that vast region relief from their freight congestion? Why not canalize the beautiful and historic Willamette? Why not apply to Sacramento and San Joaquin the same policy of improvement which Mr Hill urges for the Mississippi? If it be the duty of Uncle Sam to improve the Mississippi—and I quite agree with Mr Hill that it is not only his duty, but the part of wisdom to do so—surely it is his duty to improve all of these other streams as well, together with the many others I have not mentioned. The people on their banks are his children and entitled to his aid and assistance just as much as those who live on the banks of the Mississippi, and they need relief from freight congestion just as much relatively as the people of the Mississippi Valley.

WILL IT PAY?

These improvements would pay better than any investment this government has ever made.

It is a fact established beyond dispute that water transportation costs on an average in this country only one-sixth as much as transportation by rail, and whenever waterways are thoroughly improved not only does a large quantity of freight move thereon at rates only one-sixth as high as those by rail, but the rates of competing railroads are very materially reduced, and for every dollar of the people's money invested by Congress annually in the improvement of our waterways at least $2 a year are saved for the people in reduced rates.

The most striking instance of water transportation in this country on which we have accurate statistics is that through the Sault Ste. Marie Canal between Lake Superior and Lake Huron. According to Col. Charles E. L. B. Davis, United States engineer in charge of the work at that place, the total commerce passing through the locks in 1905 was 44,270,680 tons, which was carried an average distance of 833.3 miles at a cost per ton per mile of 0.85 of a mill, making a total of $31,420,584. It is estimated that the freight passing through the "Soo" during the year of 1906 was over 52,000,000 tons, but I have no accurate statistics thereon. The average freight charge per ton per mile on the railroads of the Union during 1905 was 7.6, which is about nine times as great as the rate on the Lakes. Now, if we assume that this great freight of 44,270,000 tons had been carried, not at the average rail rate of 7.6 mills per mile, but at 5.1 mills, which is six times the water rate, the freight charge thereon would have been more than $187,000,000, instead of the price actually paid, which was $31,000,000. Hence the saving on that amount of freight was about $156,000,000. It should be borne in mind also that there is a vast commerce on the Lakes which does not pass through the "Soo," and it is all moved at rates relatively the same, or 0.85 of one mill per ton per mile. The total cost of improvements on the Lakes is about $70,000,000, and the saving on the commerce through the "Soo" alone

in one year (1905) was nearly two and a half times as much as this total cost of all our improvements on the entire Lake System. Surely that was a wise expenditure of money.

Let me cite another instance of lake and rail rates. Between Pittsburg and the harbors of Conneaut and Ashtabula, on Lake Erie, there is a very large commerce, amounting annually to about 30,000,000 tons, composed of iron ore and coal. The ore is carried by boat from Duluth, at the head of Lake Superior, to Ashtabula or Conneaut, a distance of about 1,000 miles, and a charge of approximately 80 cents per ton. It is then loaded on cars and carried 135 miles to Pittsburg for 90 cents per ton, the rate being 10 cents higher to go 135 miles by rail than 1,000 miles by water, and the water rate being about one-seventh of the rail rate. Coal is carried from Pittsburg to these Erie ports at 90 cents per ton and loaded on boats for shipment to Duluth and other points on the Lakes, where it is hauled at the rate of 35 cents per ton, the water rate at this instance being one-twentieth of the rail rate.

THE OHIO RIVER

There is a very large commerce on the Ohio River, according to the report of the Ohio River Board of United States Engineers. The exact cost of carrying this commerce is not stated by the board, but one of its members, Maj. William L. Siebert, of Pittsburg, who is one of the ablest engineers in the corps, estimates that the cost of conveying freight on the Ohio River between Pittsburg and Louisville in 1905, even in the present unsatisfactory condition of the river, when boats are able only to operate a few months of each year, was 0.76 of one mill per ton per mile, one-tenth of the average rail rate, and that the cost between Louisville and New Orleans was 0.67 of one mill per ton per mile, about one-eleventh of the average rail rate. Hence we have the rate on the Lakes 0.85 of one mill, or one-ninth of the rail rate; on the Ohio, 0.76 of one mill, or one-tenth of that by rail, and on the lower Ohio and Mississippi, between Cairo, 0.67 of one mill, or one-eleventh of average rail rate, which is 7.6 mills per ton per mile.

This same Ohio River Board, in their report on the project for 9-foot navigation between Pittsburg and Cairo, estimate that with the Ohio River improved to that depth the freight charge between Pittsburg and Louisville would be 0.5 of one mill per ton per mile, and between Pittsburg and New Orleans 0.37 of one mill per ton per mile. They quote from an interesting report of Major Mahan, of the Engineer Corps, showing that the Volga River, in Russia, has an annual commerce of about 14,000,000 tons; that the navigation is about six months of each year; that the freight charge on cereals is 2.22 mills per ton per mile; on manufactured iron, 1.8 mills; on steel, 1.6 mills, and on naptha, 1.5 mills. They show, too, that the navigation is nearly all done against the strong current of the river, where it is much more difficult and expensive than slack water.

As an argument for the adoption of the 9-foot project they say that the steamer *Sprague* tows to market, from Louisville to New Orleans, sometimes as much as 60,000 tons of freight on one trip. The *Kaiserin Augusta Victoria,* one of the largest ships afloat, has a freight tonnage of 25,000 tons. The horse-power of the *Sprague* is 2,175; that of the *Kaiserin Augusta Victoria* 17,200, and that of sufficient locomotives to haul the *Sprague's* cargo on an average grade road, 24,000.

THE WATERWAY SYSTEM OF GERMANY

A study of the waterway system of Germany, in a recent excellent work on Modern Germany, by O. Eltsbacher, discloses the fact that Germany has developed its waterways to the highest degree, and immense quantities of freight are carried thereon. On the Oder the cost is about 3 1-3 mills per ton per mile; on the Elbe, 2½ mills; on the Rhine, 1.8 mills.

Among other things he says:

"Recognizing the importance of cheap transport and of an alternative transport system which would bring with it wholesome competition, Germany has steadily extended, enlarged, and improved her waterways, both natural and artificial, and keeps on extending and improving them year by year; and if a man would devote some years solely to the study of German waterways and make the necessary but very extensive and exceedingly laborious calculations, he would probably be able to prove that Germany's industrial success is due chiefly to cheap transport and the wise development of her waterways."

France, Holland, and Belgium have improved their waterways quite as thoroughly as Germany. It is said that freight can be moved from practically any part of these four countries, without breaking bulk, to any other part.

COST AND PROBLEMS TO BE MET

The preceding quotations from Mr Hill and Representative Ransdell, describing the situation in the Mississippi Valley, explain why the people demand a deep waterway from the Gulf to the Great Lakes, to be followed by deepening to a commercial depth all the principal tributaries of the Mississippi. No estimate of the cost of the deep waterway has yet been prepared, but it will considerably exceed $100,000,000. A board of government engineers in 1904 reported that to deepen the Mississippi and Illinois Rivers from Saint Louis to the terminal of the Chicago Drainage Canal would cost $31,000,000. This part of the project is comparatively simple. The route below Saint Louis, however, presents many difficult problems. The channel below Saint Louis is supposed to have a depth of 8 to 9 feet, but it is constantly shifting. The river frequently deposits as much as 15 feet of silt in one place in a single year, and then may carry it away in a week or less. Dredging in such places is of course useless. Competent geologists have estimated that the Mississippi River brings down 400,000,000 tons of sediment each year. From Cairo to the Gulf the river flows in a channel on the summit of a ridge which it has built up by its deposits. In this section vast and expensive levees keep the river from overflowing its banks and flooding the lower lands adjacent.

But while the difficulties of constructing a deep waterway surpass the problems presented by the Panama Canal, they are probably not insurmountable.

Many millions of dollars have already been expended on the Mississippi by state and national governments, but the results of the expenditure have been unsatisfactory, as no continuous and definite plan has been pursued, the national appropriations being irregular and uncertain. The last Congress made an appropriation for a careful examination and report by the Mississippi River Commission of the feasibility and cost of a deep waterway from the Gulf to Saint Louis. It is to be hoped that the Commission will be able to submit a comprehensive and practicable scheme, for, as President Roosevelt says in a recent address:

"The valley of the Mississippi is politically and commercially more important than any other valley on the face of the globe. Here, more than anywhere else, will be determined the future of the United States, and, indeed, of the whole western world; and the type of civilization reached in this mighty valley, in this vast stretch of country lying between the Alleghenies and the Rockies, the Great Lakes and the Gulf, will largely fix the type of civilization for the whole western hemisphere."

TRAFFIC ON THE MISSISSIPPI

Forty years ago the Mississippi and its tributaries were used for traffic much more than they are today. This traffic reached its height about 1870. During those years many handsome steamers of small draught plied up and down the river, affording a popular route to travelers from city to city. In the years following railways were built very rapidly, and as there was not enough business for both river and railway, the river com-

merce suffered. Some very interesting figures have been recently published by the United States Bureau of the Census comparing the river traffic of 1906 and 1889. While every line of business in the Mississippi Valley has increased enormously during this period, the commerce on our waterways has actually diminished.

The statistics represent all craft of 5 tons and over operating on the Mississippi River and its tributaries, chief among which are the Red River, Ouachita River, Arkansas River, Black River, Ohio River, Tennessee River, Cumberland River, Wabash River, Green River, Kanawha River, Monongahela River, Allegheny River, Missouri River, Illinois River, and the Saint Croix River.

	1906	1889
Number of vessels	9,698	7,300
Gross tonnage	4,530,476	3,364,610
Commercial valuation	$23,545,342	$14,407,162
Gross income	$17,611,555	$16,331,872
Average number of employees on vessels	15,342	15,951
Total wages paid	$5,805,807	$5,337,185
Number of passengers carried	13,691,956	10,858,894
Quantity of freight handled (net tons)	20,849,602	28,289,503

THE MARVELOUS PROSPERITY OF THE SOUTH *

In six years, 1900-1906, with an increase in the population of about 2,400,000, or something more than 10 per cent, the South has increased the value of its farm products by $728,000,000, or 57 per cent, and the value of its manufactures $761,000,000, or 52 per cent. It has added 3,493,000 spindles to its cotton-mill outfit, an increase of 55 per cent, and its mills used in 1906 about 2,375,000 bales of American cotton, or 48 per cent more than 1900. In the six years the South's annual pig-iron production has increased by 896,000 tons, or 34 per cent; its coal production by 34,202,000 tons, or 69 per cent; the value of exports at its ports, $177,000,000, or 38 per cent, though it furnishes more merchandise for export than it handles through its own ports, and in that time its railroad mileage has increased by 11,441, or nearly 22 per cent, and the assessed value of property by $2,490,000,000, or nearly 48 per cent.

With all this money-making going on, it is not surprising that the South is spending millions of money for improvements of many kinds. Counties are building better roads, better bridges, and better school-houses. Municipalities are erecting modern public buildings, installing water-works and sewerage systems, and using up-to-date methods and materials in improving streets. Railroad operations are double-tracking their old lines and extending new ones, are building handsome passenger stations, increasing terminal facilities, and adding to rolling stock. Individuals are devoting their earnings to improving their homes in town or country, or in building new ones, in enlarging barns, in buying stock, farm implements and machinery, in installing fencing, and in adding to the machinery for manufacturing. These investments are likely to increase during the present year and to keep pace with the increasing earning capacity of the South. They are some of the manifestations of a prosperity that is adding every day of the year about $7,300,000 to the wealth of the South, and which has brought that wealth close to $20,000,000,000.

During 1906 the wealth of the South increased $7,300,000 for every day of the year, Sundays included, or a total of $2,690,000,000. The actual increase in assessed value was $1,076,479,788, and this was on the average 40 per cent of the true value. The amazing magnitude of this gain of $7,300,000 a day is strikingly shown by the statement of the London *Express*, which, bemoaning the inability of Great Britain to keep pace with America's growth, put the increase in Great Britain's wealth at $7,000,000 a week. Contrast the South's increase of $7,300,000 a day with Great Britain's $7,000,000 a week, and then think of the future.

* Extract from the *Manufacturers' Record*.

NEW TOPOGRAPHIC MAPS

THE topographic maps recently issued by the United States Geological Survey cover the following areas:

State.	Quadrangle.
Arizona	Sacaton
Alabama	Birmingham (resurvey)
California	Holtville
Do.	Olancha
Do.	Tesla
Do.	Yosemite Special
Georgia	Talbottom
Iowa	Des Moines
North Carolina–South Carolina	Saluda
North Dakota	Bismarck
Ohio	Blanchester
Do.	South Charleston
Do.	West Manchester
Pennsylvania	Millerstown
South Carolina	Sharon
South Dakota	Redwater
West Virginia	Ripley
Wyoming	Younts Peak

New editions of sheets covering the following areas have also been issued:

State.	Quadrangle.
California	Dardanelle
Do.	San Pedro
Do.	Southern California, Sheet No. 1
Maine	Bath
Maryland	Baltimore
New York	Pulaski
Do.	Pultneyville
New York–Connecticut	Millbrook
Oregon	Ashland
Virginia	Spottsylvania
West Virginia	Harpers Ferry

The topographic work of the Survey in California, Maine, Maryland, New York, North Carolina, Ohio, Oregon, Pennsylvania, and West Virginia is carried on in coöperation with the states.

The term "quadrangle," used in the above lists, is adopted to designate the unit of the survey, and represents an area of one-sixteenth, one-fourth, or one "square degree." Each quadrangle is named from some well-known place or feature located within it. Index maps showing the location of the quadrangles in relation to adjoining areas will be furnished on application.

The maps of these quadrangles, which are known as atlas sheets, are for sale by the Survey. Sheets of standard size are sold at the rate of 5 cents each, or 3 cents each in lots of 100 or more.

INTRODUCING REINDEER INTO LABRADOR

THE remarkable success of the United States government's experiments in importing domestic reindeer from Siberia into Alaska, which has enabled nearly 20,000 natives of northern Alaska to become self-supporting, has induced Dr Wilfred T. Grenfell, the medical missionary to the Labrador coast, to try the same experiment in Labrador. Dr Grenfell has recently purchased 300 reindeer in Norway, which will be carried across the ocean in a special steamer early in December. The reindeer are in charge of several Laplanders, and will be distributed in herds along the Labrador coast. The rapid extermination of game in Labrador has made Dr Grenfell realize that in a few years the Eskimos and natives of Labrador will die of starvation or become dependent on bounty unless a new food supply is found for them. He hopes that the natives of Labrador, like the Alaskan natives, will soon have herds of domestic reindeer to furnish them with food, clothing, and utensils.

It is now nearly 20 years since Dr Sheldon Jackson, of the United States Bureau of Education, recommended and obtained from Congress an appropriation to import reindeer from Siberia across the Bering Strait. During the first year 16 deer were brought over by Dr Jackson personally. During successive years there were imported others until their number reached a thousand. There are today no less than 16,000 domestic reindeer distributed in herds along the north Alaskan coast. Large numbers of them belong to the mission stations, giving employment to the natives in the vicinity, while a considerable number of the Eskimos possess herds of their own.* The United States government loans its reindeer to worthy natives or mission stations for a term of years. Dr Grenfell has modeled his program after the plan so successfully followed by the United States government under the direction of Dr Jackson.

*See "Reindeer in Alaska", NAT. GEOG. MAG., April, 1903.

Photo from S. A. Knapp, U. S. Dept. of Agriculture, in the NAT. GEOG. MAG., p. 248, 1905.

TAMIL GIRLS PICKING TEA, CEYLON

SCENES FROM EVERY LAND

By GILBERT H. GROSVENOR
Editor of the National Geographic Magazine

AS CONSIDERABLY more than one-half of the edition of this book has already been disposed of, those members desiring copies and who have not as yet ordered them are urged to do so at once. The volume contains 250 illustrations, nearly all being full page and all selected from the many hundreds that have appeared in the National Geographic Magazine. It is bound in green buckram, in such form as to be very durable. The book contains a small chart of the world in five colors, to serve as a guide to the illustrations, and a bibliography of the best books descriptive of foreign countries, natural history, and general geography, including gazetteers and atlases. The volume is 7x10¼ inches, and is printed on the same superior paper used by the Magazine. The price of this unique and valuable volume is $1.00, postpaid, and as the **EDITION IS LIMITED,** your order should be sent in at once on blank below. The volume will be delivered about October 20.

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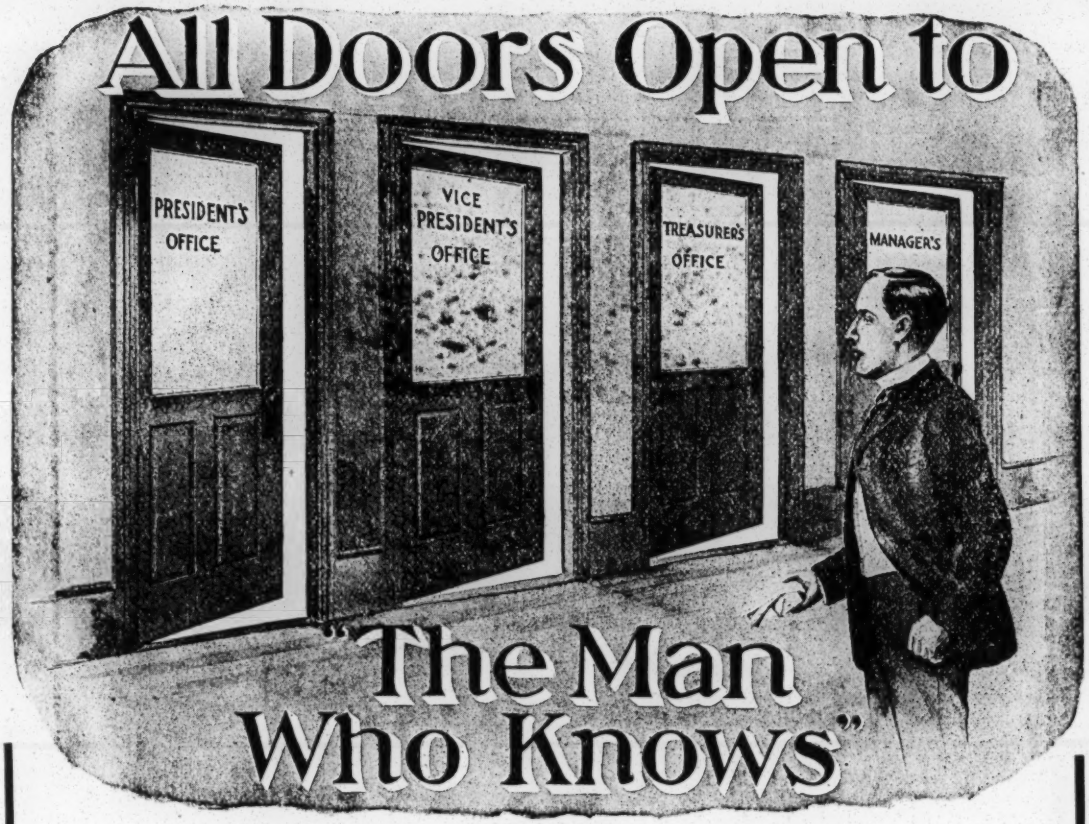

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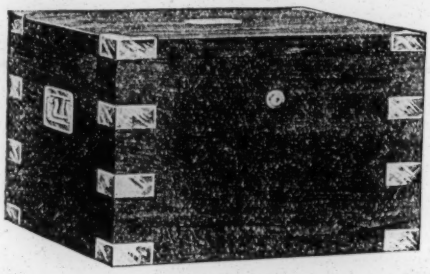

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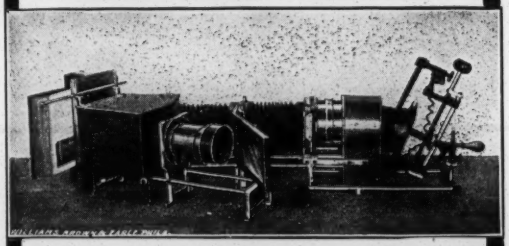

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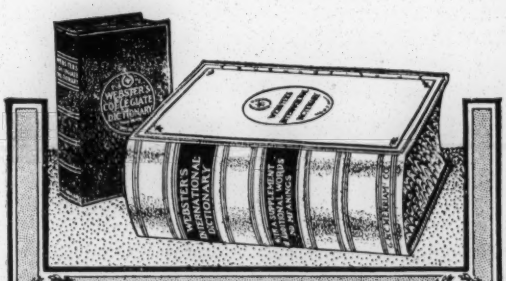

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